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THIRD SERIES VOL 66 NUMBER 9 JULY 1959

THE JOURNAL OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS

66 PORTLAND PLACE LONDON W1 · THREE SHILLINGS AND SIXPENCE

Stanley Mills, 1813, rear elevation *Photo: Eric de Maré* [A]

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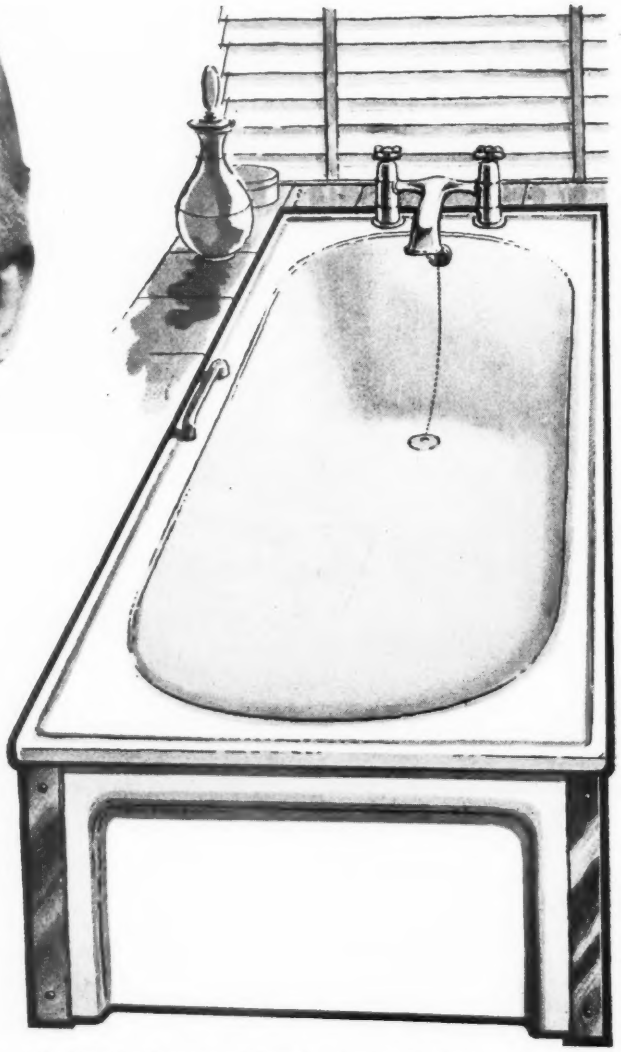

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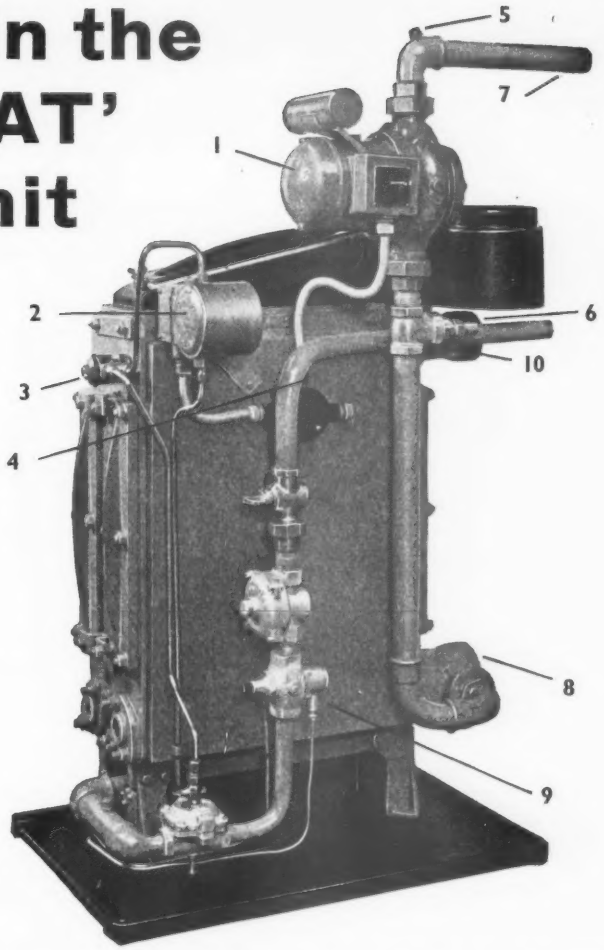

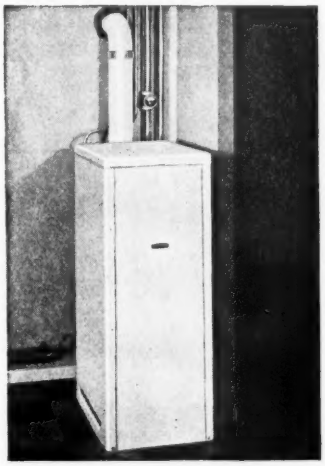

LEFT: *The totally enclosed 'Diplomat' Small Bore Unit in a kitchen setting.*

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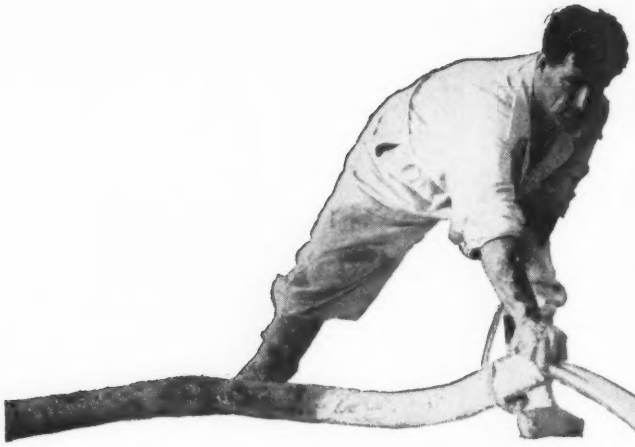

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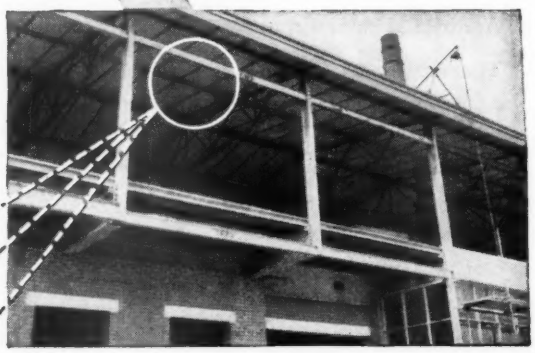

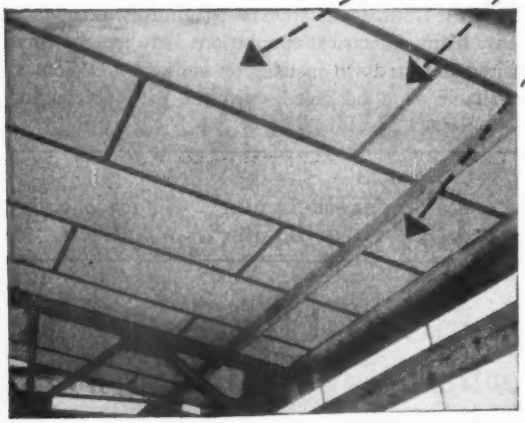

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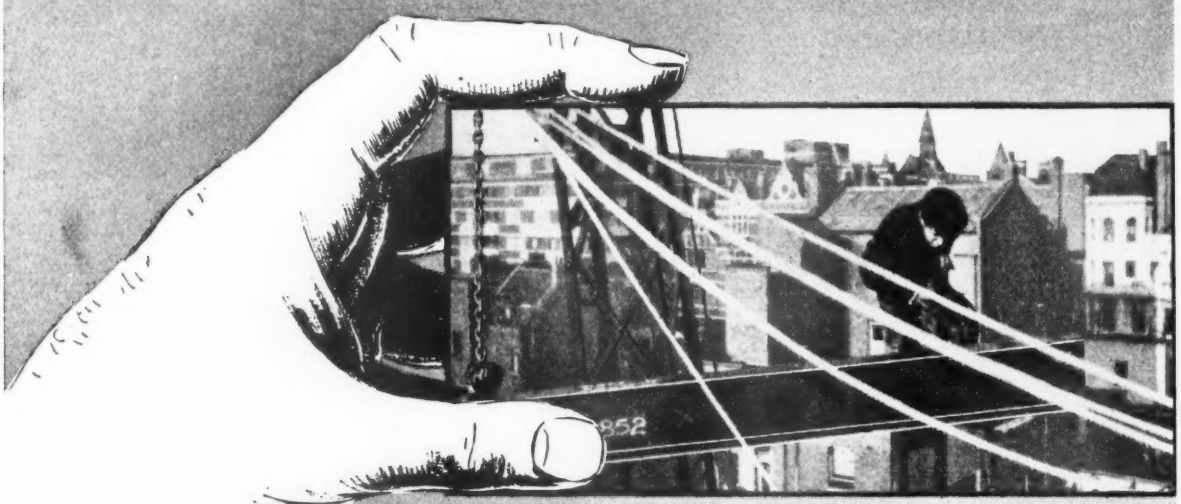

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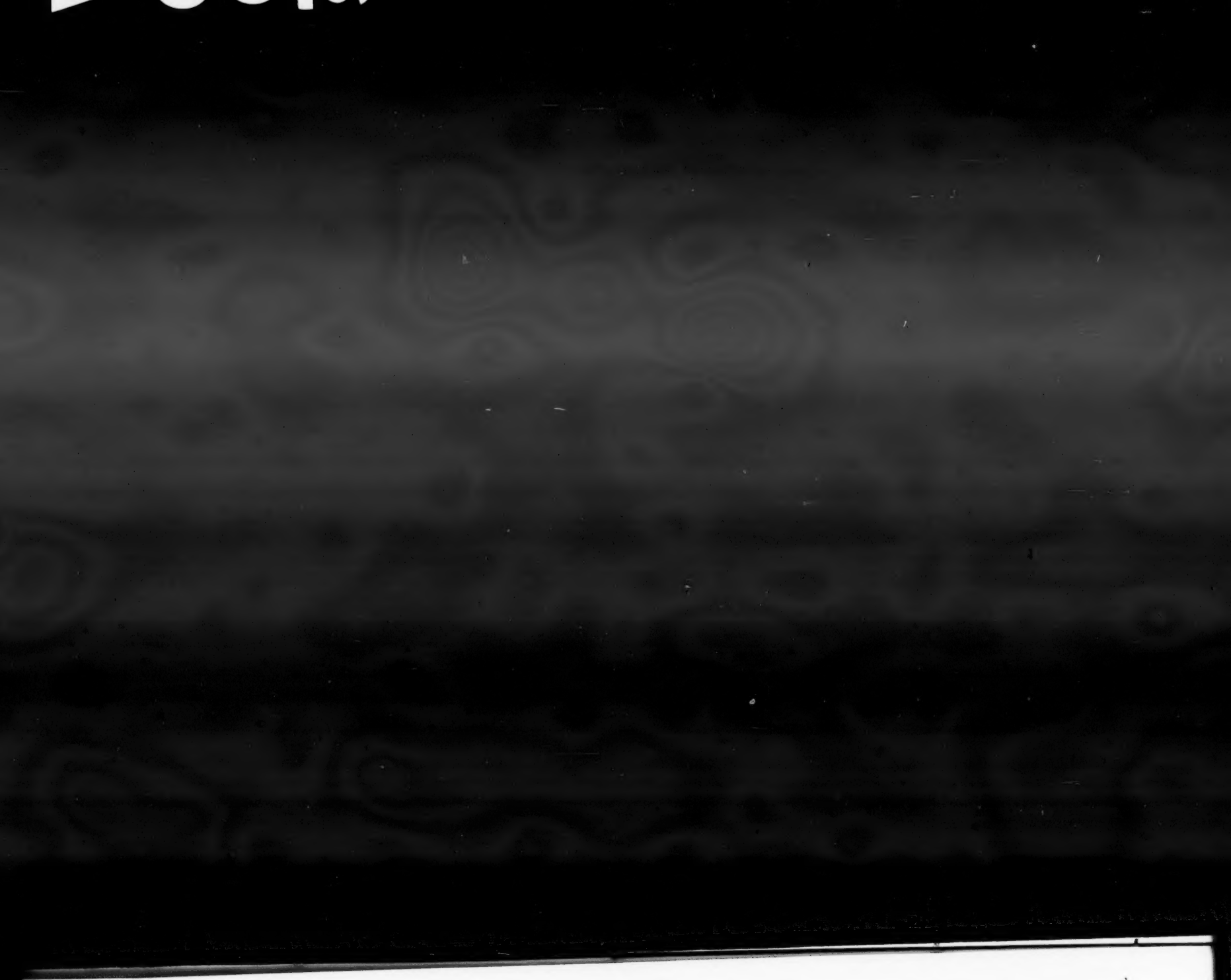
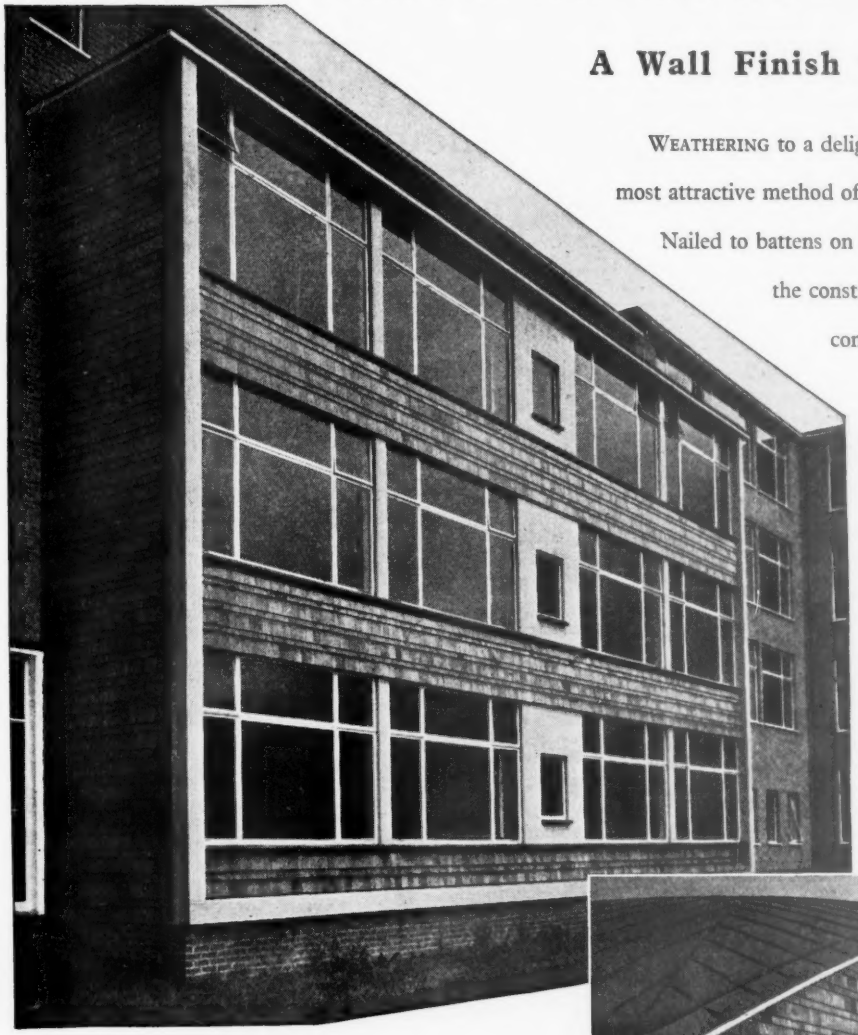


COLT *Canadian Cedar Wood* SHINGLES



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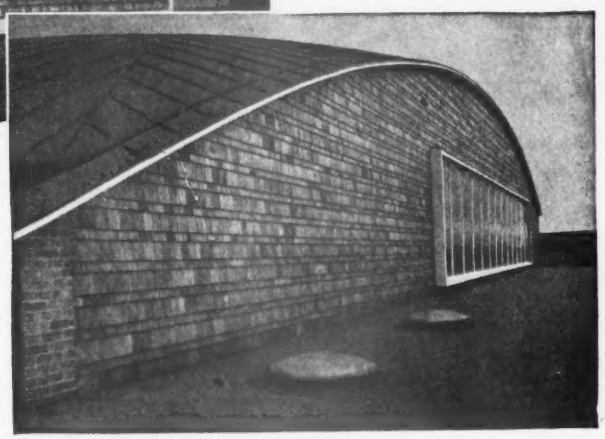

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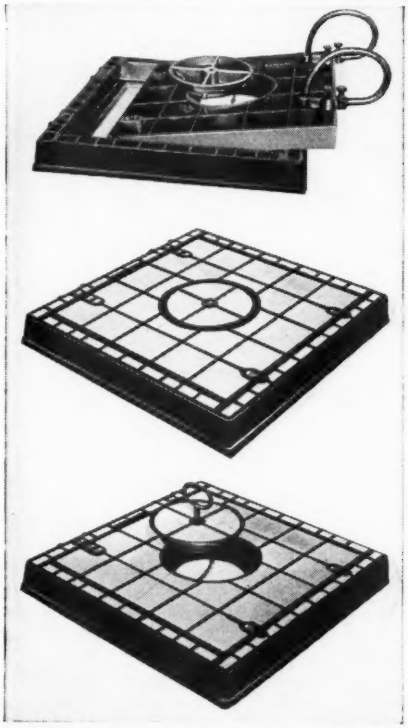

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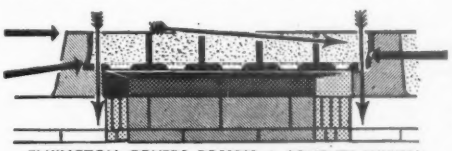

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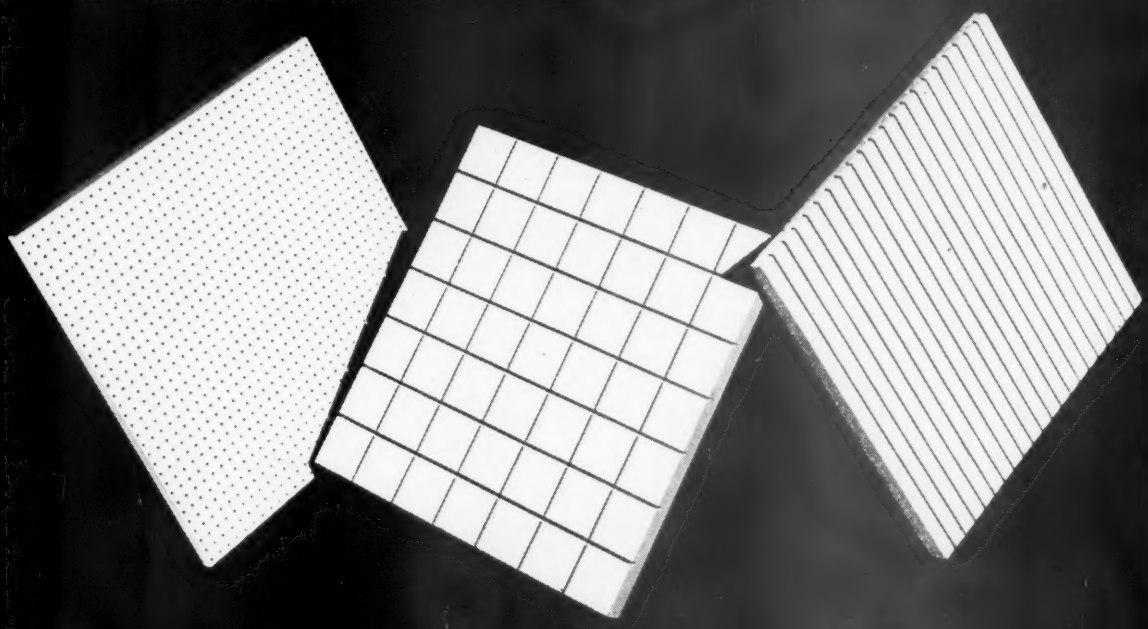

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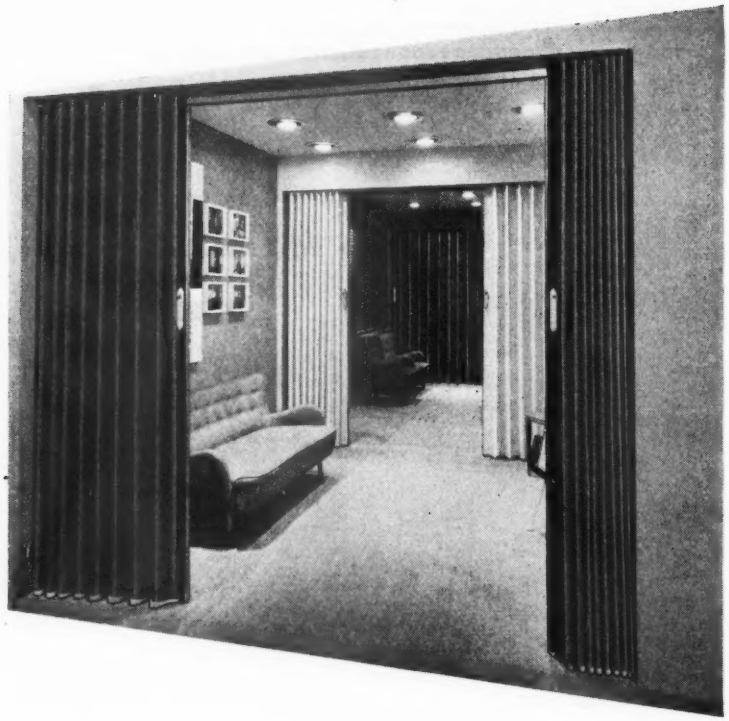
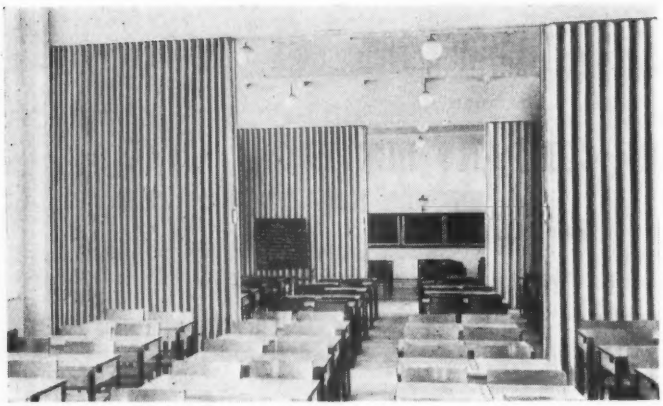


ROOMS WITHIN A ROOM – *The* **MODERNFOLD** *Way*



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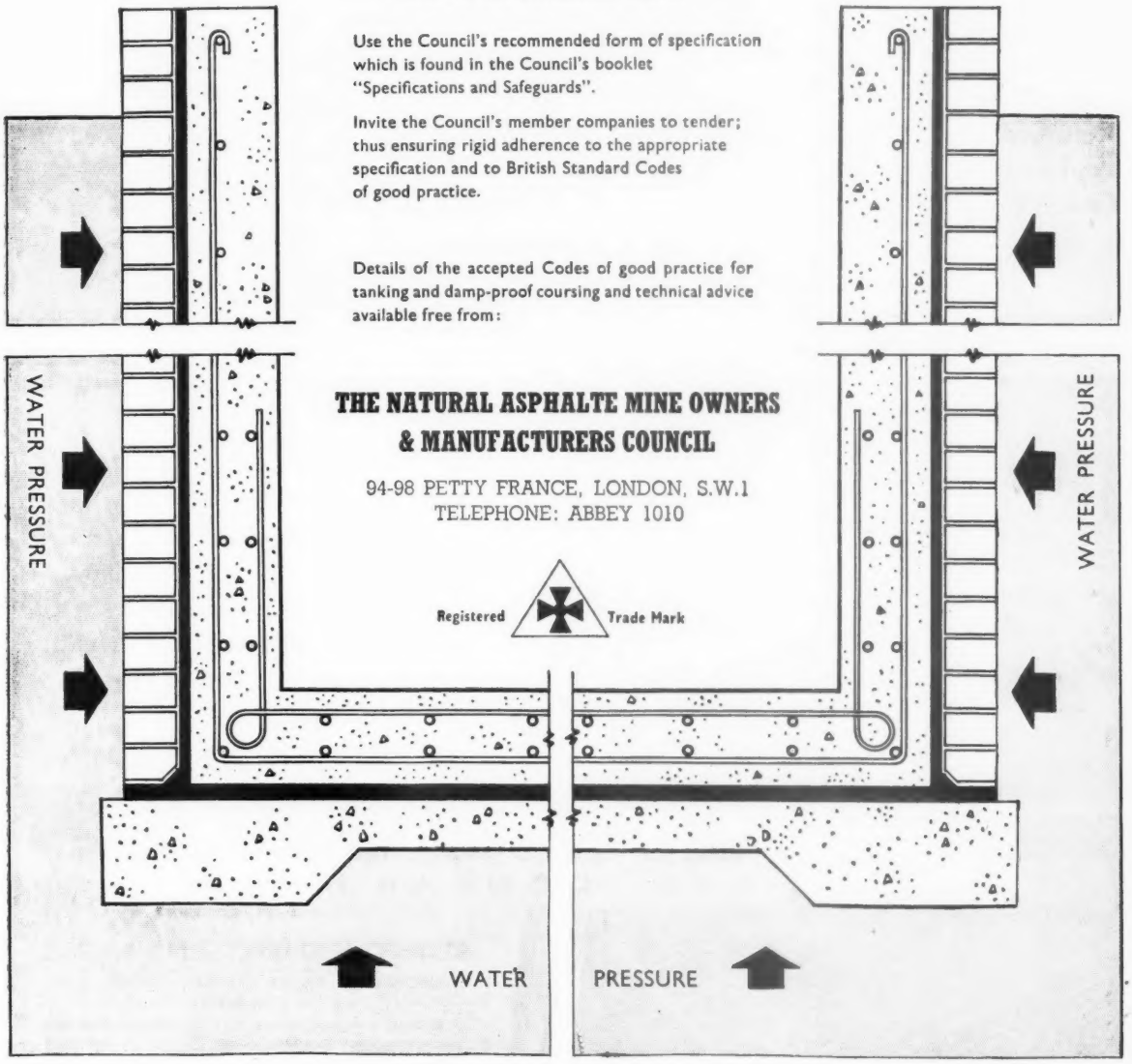
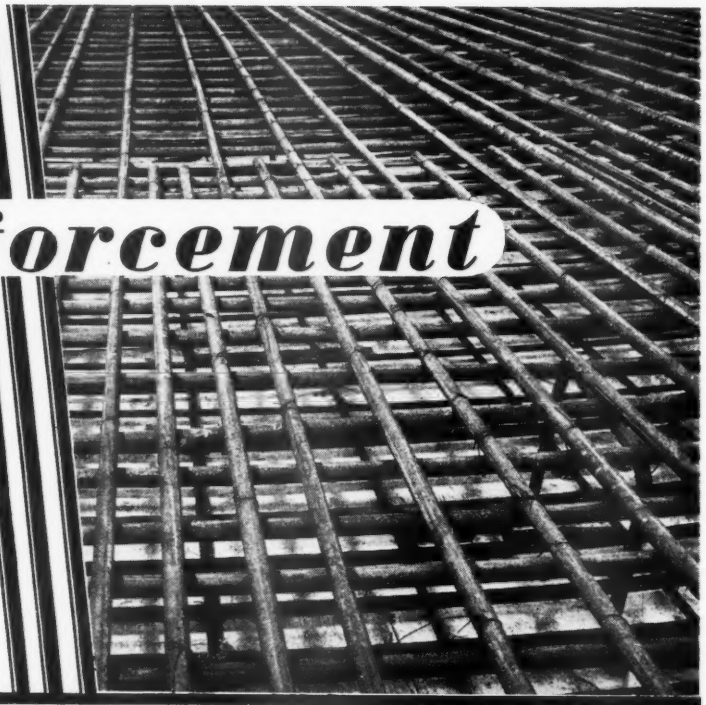


Steel Reinforcement



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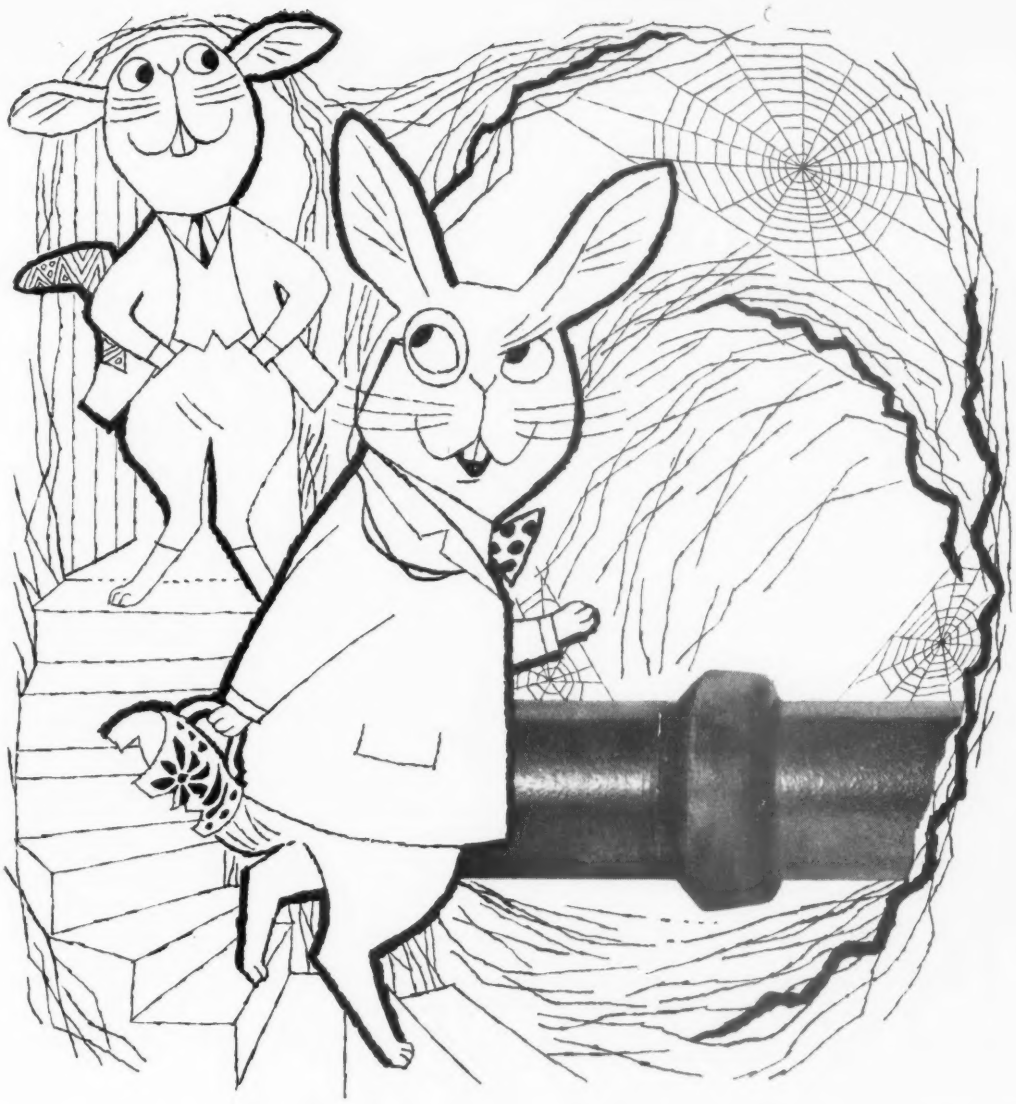

'That was my best moustache cup,' said Baron Rabbit faintly.

'Was it, cobber?' said his cousin from Down Under, smashing a priceless goblet with his elbow. 'No use for he-rabbits, these delicate things.'

'Just come down to the vaults,' said the Baron. 'I've got an heirloom there that even you could not break.'

'Lead me to it,' said his cousin.

'Here we are, then,' said the Baron, pushing aside the cobwebs. 'It's a salt glazed clay drainpipe. Been in the family for centuries, and it'll last centuries longer. Strong, acid-resistant, won't buckle or scratch, virtually impermeable — now even you couldn't damage that.'

'Oh yeah?' said his cousin, bashing away at it with his boomerang, quite without effect.

'I'll leave you to it,' said the Baron, locking the door behind him. 'I'll come back next year and see how you're getting on.'

Salt Glazed Clay Pipes—for drainage, for ever

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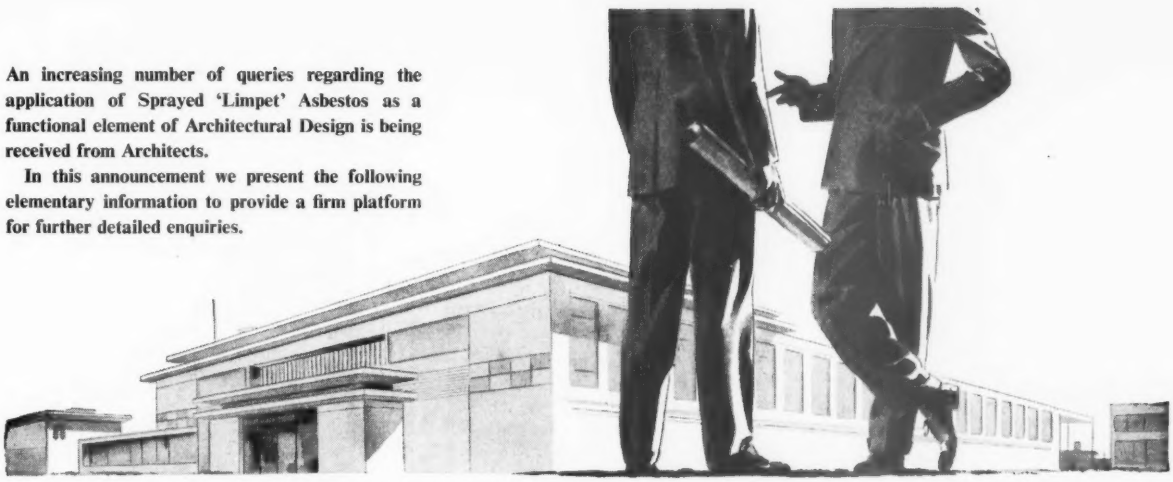
An increasing number of queries regarding the application of Sprayed 'Limpet' Asbestos as a functional element of Architectural Design is being received from Architects.

In this announcement we present the following elementary information to provide a firm platform for further detailed enquiries.



an architect asks questions about Sprayed 'Limpet' Asbestos by NEWALLS

REGD.

"What do you consider is the major advantage of Sprayed 'Limpet' Asbestos?"

Probably the most important element is that the 'Limpet' process gives intimate surface contact, sealing all joints, covering rivets, irregularities and protrusions in a continuous coat that entirely eliminates air spaces—a significant factor in itself.

"I understand that Sprayed 'Limpet' Asbestos has two insulating properties?"

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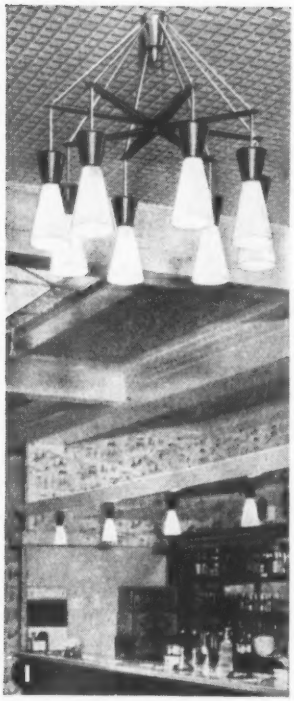

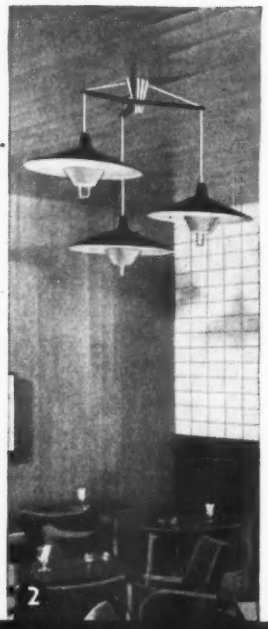

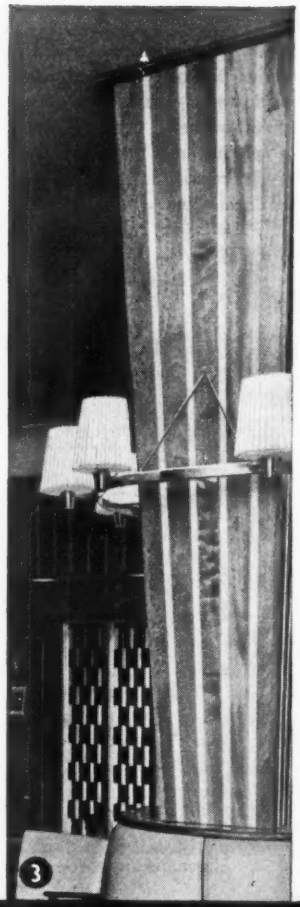

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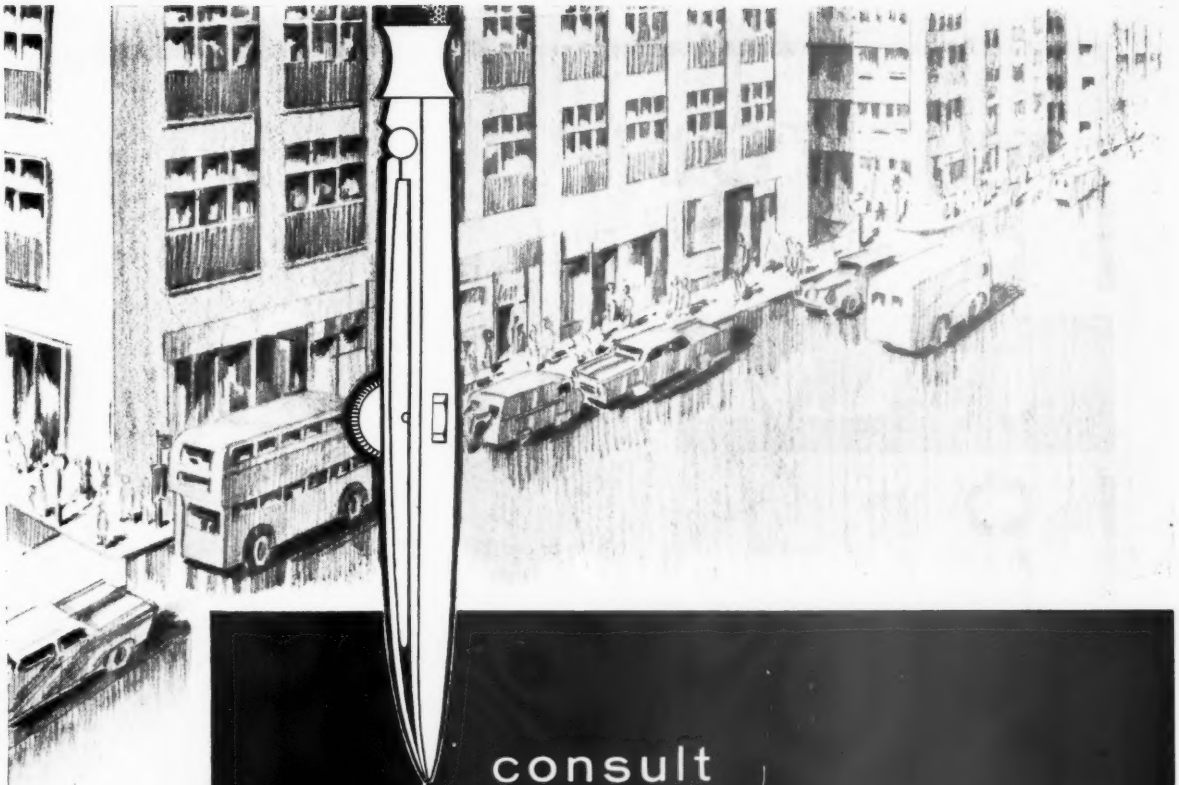

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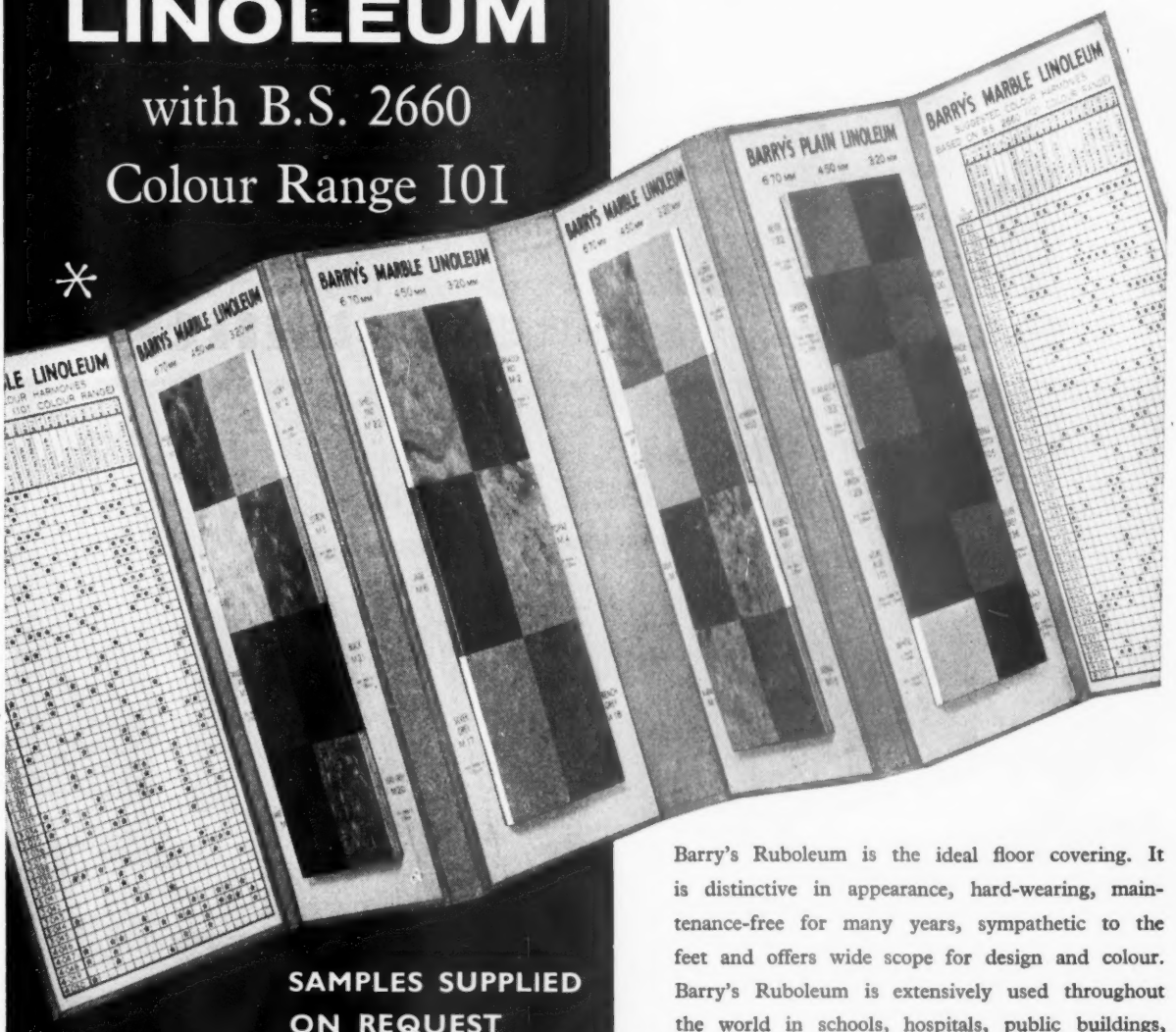

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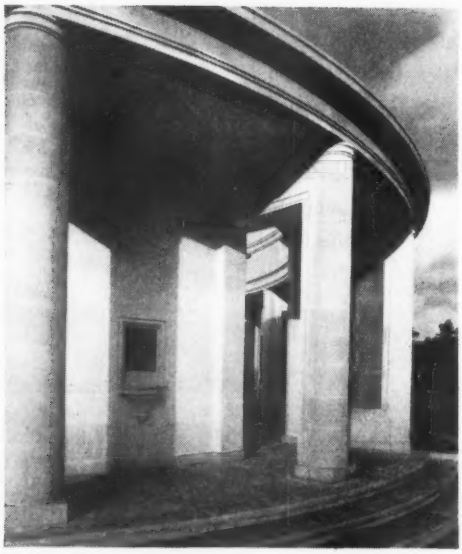

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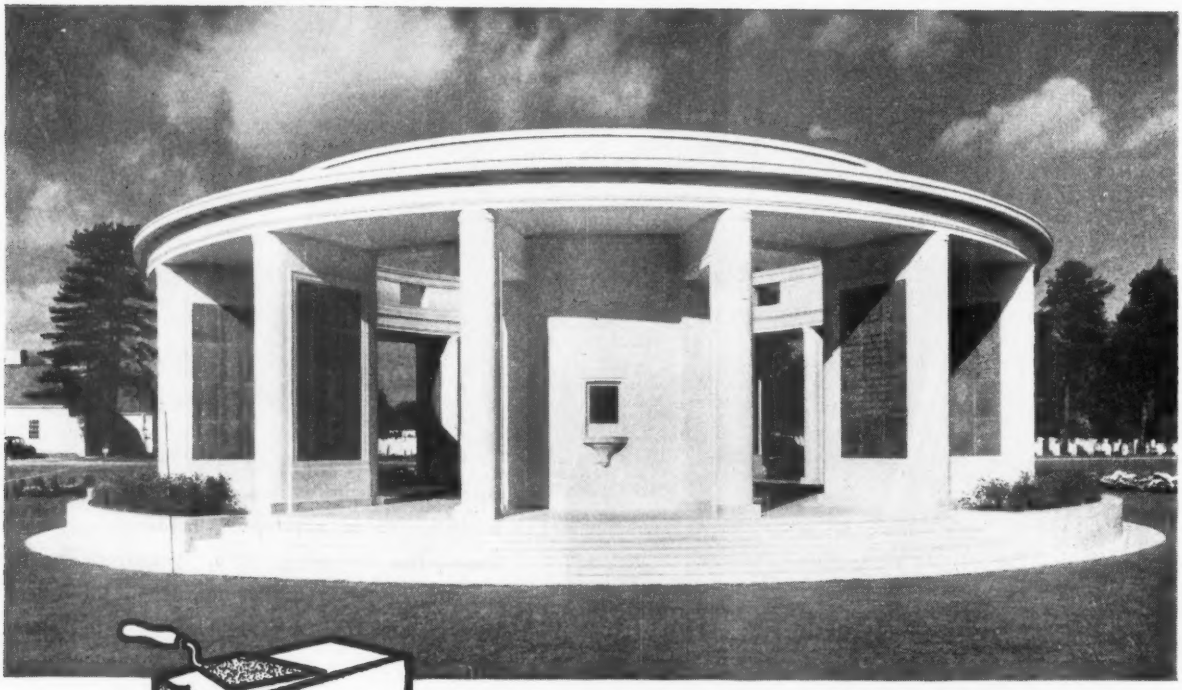

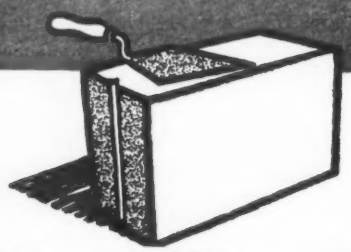

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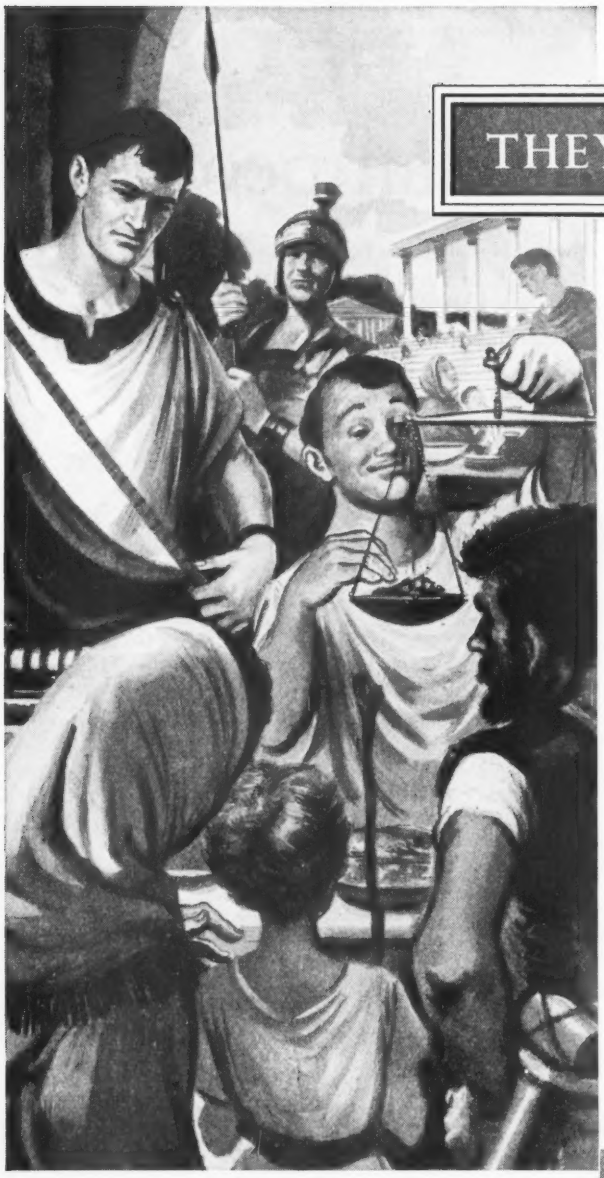

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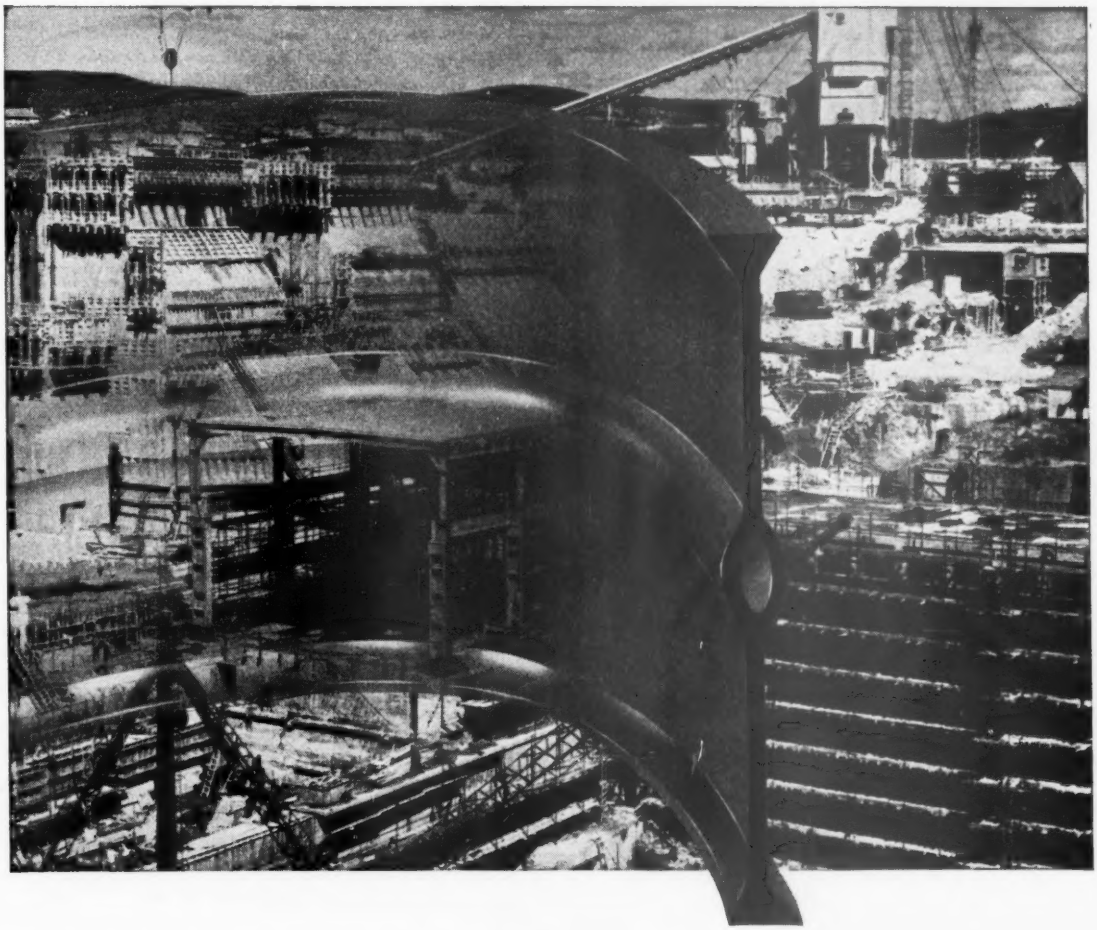

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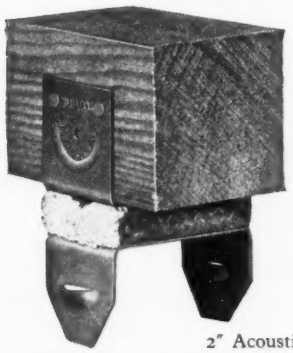

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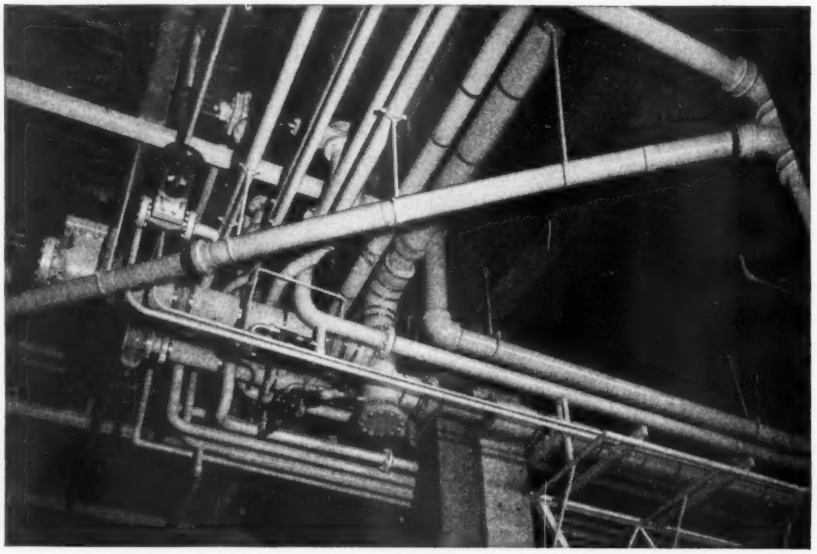

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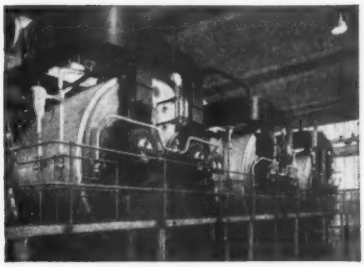

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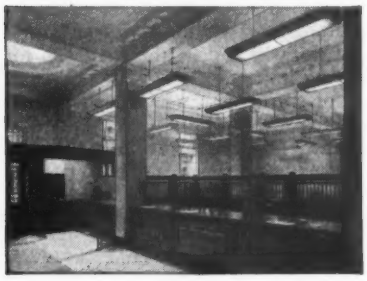

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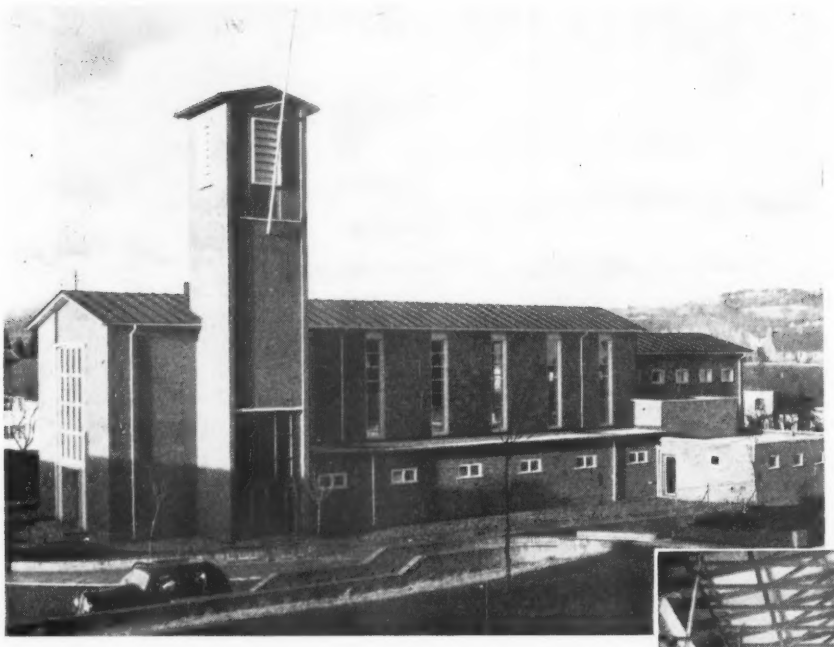

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Architects:
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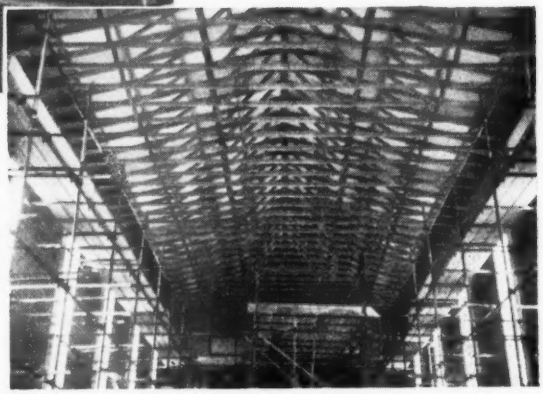
BRODERICK INSULATED COPPER ROOFING at 15 deg. pitch on nailed trussed rafter roof framing of tanalised timber.



Interior of nave during construction showing trussed rafters at 2 ft. centres

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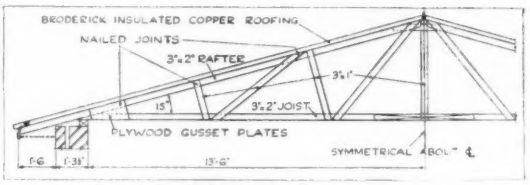

Detail of nailed trussed rafters over nave. Note: all timber and plywood tanalised under pressure before assembly.

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JULY 1959 THIRD SERIES VOL. 66 NUMBER 9 THREE SHILLINGS AND SIXPENCE

Council Election Results

Report to the Chairman of the General Meeting, Tuesday 16 June 1959

The Scrutineers appointed to count the votes for the election of the Council for the Session 1959–1960 *beg to report as follows:*

4,447 *Voting Papers were received of which* 55 *were invalid.*

In addition 234 *envelopes were received which were invalid* (136 *unsigned*, 45 *unstamped*, 53 *too late*).

The result of the election is as follows:

COUNCIL 1959–1960

President

BASIL SPENCE (unopposed)

Past Presidents

KENNETH MERVYN BASKERVILLE CROSS (unopposed)
SIR HOWARD ROBERTSON (unopposed)

Fellow Members of Council

Elected		*Votes*
1.	SIR HUGH MAXWELL CASSON	2,115
2.	DONALD EVELYN EDWARD GIBSON	1,797
3.	ERIC ALFRED LYONS	1,633

Associate Members of Council

Elected		*Votes*
1.	WILLIAM ALEXANDER ALLEN	1,858
2.	STIRRAT ANDREW WILLIAM JOHNSON-MARSHALL	1,827
3.	HENRY THORNHILL SWAIN	1,146

Licentiate Member of Council

Elected		*Votes*
1.	GWYN HENRY MORRIS	2,926

Ordinary Members of Council

Elected		*Class of Membership*	*Votes*
1.	RICHARD HERBERT SHEPPARD	[F]	1,427
2.	FREDERICK GIBBERD	[F]	1,371
3.	DENIS CLARKE HALL	[F]	1,222

Candidates Not Elected

		Class of Membership	*Votes*
1.	TOM MELLOR	[A]	1,142
2.	ANDREW GEORGE DERBYSHIRE	[A]	1,139
3.	HERBERT JOHN WHITFIELD LEWIS	[A]	1,129
4.	LEONARD CECIL HOWITT	[F]	1,092
5.	FREDERICK BERNARD POOLEY	[F]	1,053
6.	BRYAN PERCY WESTWOOD	[F]	1,010
7.	ERIC BEDFORD	[A]	989
8.	DENZIL BRIDGE NIELD	[A]	891
9.	FREDERICK HAMER CROSSLEY	[F]	846
10.	EDMUND DOUGLASS JEFFERISS MATHEWS	[F]	835
11.	JOHN HENRY FORSHAW	[F]	832
12.	CHARLES HOWARD SIMMONS	[A]	795
13.	ALEXANDER JOHN GORDON	[A]	768
14.	ROBERT WILLIAM PAINE	[A]	759
15.	ALEXANDER STEELE	[A]	752
16.	JOSEPH ROY PARKER	[A]	729
17.	GORDON THOMAS TAIT	[F]	619
18.	FRANK REGINALD STEELE	[F]	613
19.	ROBERT OSWALD FOSTER	[F]	527
20.	ROBERT DUNCAN SCOTT	[F]	488
21.	JACK BERNARD BRANDT	[F]	462
22.	MERVYN HENRY GERALD BLACKMAN	[A]	418
23.	GEOFFREY WILLIAM DIXON	[A]	384
24.	CHARLES H. PIKE	[F]	376
25.	CHARLES HERBERT BINGHAM-POWELL	[A]	317
26.	DONALD PLASKETT MARSHALL	[F]	159

Representatives of Allied Societies in the United Kingdom or the Republic of Ireland

(1) *Six Representatives from the Northern Province of England*

PROFESSOR JACK HOLLINGWORTH NAPPER [F] (Northern Architectural Association)

PROFESSOR REGINALD ANNANDALE CORDINGLEY [F] (Manchester Society of Architects)
MALCOLM GLYNN GILLING [F] (Liverpool Architectural Society)
ARTHUR LAZENBY [A] (York and East Yorkshire Architectural Society)
ERIC ORME ROBINSON [A] (West Yorkshire Society of Architects)
WILLIAM LAMBIE CLUNIE [F] (Sheffield, South Yorkshire and District Society of Architects and Surveyors)

(2) *Five Representatives from the Midland Province of England*

EDWARD HOLMAN [F] (Birmingham and Five Counties Architectural Association)
TOM ANDERSON COLLINS [F] (Leicestershire and Rutland Society of Architects)
JOSEPH ARNOLD WARDLEY [A] (Northamptonshire, Bedfordshire and Huntingdonshire Association of Architects)
EDWARD HEATHCOTT ASHBURNER [F] (Nottingham, Derby and Lincoln Society of Architects)
ARTHUR WILLIAM ECCLESTONE [L] (East Anglian Society of Architects)

(3) *Six Representatives from the Southern Province of England*

JOHN RADFORD [A] (Devon and Cornwall Society of Architects)
ERNEST FREDERICK TEW [F] (Wessex Federal Society of Architects)
DAVID BEECHER [F] (Berks, Bucks and Oxon Architectural Association)
FRANK ROLAND GREENEN [A] (Hampshire and Isle of Wight Architectural Association)
STANLEY EDWARD BRAGG [F] (Essex, Cambridge and Hertfordshire Society of Architects)
REGINALD ARTHUR COOKSEY [F] (South Eastern Society of Architects)

(4) *Four Representatives of Allied Societies in Scotland nominated by the Council of the Royal Incorporation of Architects in Scotland*

JAMES ANDREW CARRICK [F] (Ayr)
GEORGE HASLEHURST LAWRENCE [A] (Edinburgh)
JAMES ALLAN HUGH MOTTRAM [A] (Edinburgh)
THOMAS HILL THOMS [F] (Dundee)

(5) *One Representative of Allied Societies in Wales*

LEWIS JOHN [F] (South Wales Institute of Architects)

(6) *Two Representatives of Allied Societies in Ireland*

HARRY STANLEY ROBSON [A] (Royal Institute of the Architects of Ireland)
GEORGE PHILIP BELL [A] (Royal Society of Ulster Architects)

Representatives of Societies in Alliance with the Royal Institute Overseas

DOUGLAS EDWIN KERTLAND [F] (Royal Architectural Institute of Canada)
KENNETH MERVYN BASKERVILLE CROSS [F] (Representative in the United Kingdom)
To be appointed. (Royal Australian Institute of Architects)
To be appointed. (Representative in the United Kingdom)
PROFESSOR CYRIL ROY KNIGHT [F] (The New Zealand Institute of Architects)
REGINALD HAROLD UREN [F] (Representative in the United Kingdom)
HENRY ALFRED PARKES KENT [A] (The Institute of South African Architects)
PROFESSOR SIR WILLIAM HOLFORD [F] (Representative in the United Kingdom)
HOMI NAUSHIRWAN DALLAS [F] (The Indian Institute of Architects)
STUART BENTLEY [F] (Representative in the United Kingdom)

Representative of the Architectural Association (London)

HENRY THOMAS CADBURY-BROWN [F]

Representative of the Association of Building Technicians

KENNETH JOHN CAMPBELL [A]

Chairman of the Board of Architectural Education

DAVID HERMAN BEATY-POWNALL [F]

Chairman of the R.I.B.A. Registration Committee

STANLEY VINCENT GOODMAN [F]

Two Representatives of the R.I.B.A. Salaried and Official Architects' Committee

To be appointed

Chairman of the R.I.B.A. Allied Societies' Conference

NORMAN HAROLD FOWLER [F] (Leeds)

Election of Two Honorary Auditors

JOHN CLIFFORD RATCLIFF [F]
DAVID BARCLAY WATERHOUSE [A]

Scrutineers

JOHN J. ADAMS	FRANCIS KERR
F. STEVEN ALEXANDER	RAYMOND O. MOSS
ALFRED BALL	A. J. NORCLIFFE
E. HUNWICK BOOBYER	N. C. NULLIS
LAWRENCE A. BUTTERFIELD	D. S. PEARCE
E. A. DULEY	NORMAN RIX
D. MURRAY EVANS	N. A. ROYCE
SIDNEY HAROLD FISK	MAURICE H. RUSSELL
G. R. GLENNY	F. A. M. SELLEY
MAXWELL C. GRAY	DEREK J. SHARP
RONALD HARDY	THOMAS SIBTHORP
DAVID HUBERT	R. E. SUMMERS
ERIC HUGHES	RUSSELL G. D. VERNON
J. C. KENNEDY	JOHN A. WHITTAKER

ERIC H. FIRMIN, *Chairman*

This Issue

This issue was practically ready for press at the time of the printing stoppage on 18 June. It has been decided to bring it out as it stands with the least possible delay so that work on the August JOURNAL is not held up.

This has meant, unfortunately, that there is no reference to all the meetings and other events that have taken place in the interim, but it is hoped that it will be possible to make up leeway gradually by reducing the monthly interval between the next three or four issues so as to catch up with the publication schedule before the end of the year.

Birthday Honours

Knight Bachelor. Leslie Ernest Peppiatt, President of the Law Society.
C.B. Eric Bedford, C.V.O. [*A*], Chief Architect, Ministry of Works.
C.B.E. G. B. Howcroft, M.C. [*F*], Marshall A. Sisson, A.R.A. [*F*], Leonard A. Walden, Past President, National Federation of Building Trades Employers.
O.B.E. R. H. Francis, F.R.I.C.S., Member of the Joint Contracts Tribunal, S. J. Garton [*L*], Ralph Hobday [*A*], Eric A. Lyons [*F*], G. R. C. Muston [*F*], New Zealand.
M.B.E. W. E. Hollins [*F*], W. T. Powell [*A*], W. I. Shipley [*A*], Kuala Lumpur.

H. S. Goodhart-Rendel

With great regret the JOURNAL records the death of a very distinguished Past President, Mr. H. S. Goodhart-Rendel, C.B.E., who died in London on 21 June after a long illness.

Council Business

The Council met on 16 June, with the President, Mr. Basil Spence, in the chair.

Formal approval was given to the award by the London Architecture Bronze Medal Jury, for the year ending 31 December 1958, in favour of the Trades Union Congress Headquarters building, Great Russell Street, W.C.1, designed by David du R. Aberdeen [*F*], general contractors, Sir Robert McAlpine and Sons, and to the award by the R.I.B.A. Architecture Bronze Medal Jury in the area of the Hampshire and Isle of Wight Architectural Association, for the four-year period ending 31 December 1958, in favour of the Punshon Memorial Church, Exeter Road, Bournemouth, designed by Ronald Sims [*A*]: general contractors, Messrs. Cooper and Rowe (Bournemouth) Limited.

The question of the formation of service companies by architects has needed clarifying. The Council gave approval to a memorandum prepared by the Practice Committee being made available to members on application (it will not be published in the JOURNAL). The memorandum sets out various considerations in regard to finance, and the Code of Professional Conduct in connection with the formation of service companies for the purpose of holding the business assets of firms.

On the recommendation of the Science Committee, approval was given to the Institute's becoming an Associate Member of the International Commission for Building, known as C.I.B., for the purpose of furthering research into the most advantageous system of office classification for trade, technical and design literature, a thing we all want to discover. Other points from the Minutes are given on page 330.

Submissions of Applications under the Building By-Laws and the Town and Country Planning Act, 1947

The attention of the Council has been drawn to the prevailing practice of submitting plans together with planning applications without the name and qualification of the author being shown.

The Council are of the opinion that such practice is not desirable because it makes it easy for unqualified persons to submit plans, and because it opens the door for abuse.

In view of this, the Council wish to put on record that it is highly desirable that members of the Royal Institute submitting plans under Building By-Laws and the Town and Country Planning Act, 1947, *should show their name and qualifications on the plans.*

C. D. Spragg

At the invitation of the JOURNAL, Sir Percy Thomas has kindly consented to write a valedictory to the retiring Secretary.

'At the end of July, Bill Spragg retired from the post of Secretary to the R.I.B.A., a post which he has filled with great distinction for 14 years, but that is only part of the story. Spragg entered the service of the R.I.B.A. in 1913—46 years ago—and no man has given more loyal and whole-hearted devotion to the affairs of the Institute.

'He was promoted Assistant Secretary in 1926 and Secretary in March 1945, following the retirement of Sir Ian MacAlister. My own association with the R.I.B.A. Council and its Committees began just after the 1914–18 War and this experience, together with five years as President, enables me to have an intimate knowledge of the great value of the services he has rendered to our profession.

'Spragg was closely associated with Sir Ian MacAlister in all the outstanding events and developments of the R.I.B.A. up to MacAlister's retirement, the most important of these being the passing of the Architects' Registration Acts of 1931 and 1938. He has seen the R.I.B.A. grow from what was virtually a small London society to an organisation covering the whole of the British Commonwealth. When he joined the Institute in 1913, the total membership was 4,578—it is now 18,787 of which 3,430 are working overseas. He has served on a number of Government Committees and Panels and has acted as Joint Secretary to the Joint Contracts Tribunal since its formation in 1932.

'He played a great part in bringing together the private practitioner and the official architects, at a time when there was a great danger of a complete break between these two sections of the Institute. His approach to our problems, his tact and keen sense of humour, endeared him to all members, and he knew a large proportion of them personally, not only in London but in most of the provincial cities and, indeed, overseas, for in recent years he has accompanied Presidents on the Tours of the Dominions which have done so much to cement the bonds between the mother Institute and those of the daughter Societies. In 1951 he accompanied Graham Henderson and Mrs. Henderson to Canada and the U.S.A. In 1957 with Kenneth Cross he journeyed to Singapore, Australia, New Zealand, Canada and the United States (approximately 33,000 miles, nearly all by air).

'This year he and Basil Spence accompanied by Mrs Spence went to Africa—Khartoum, Uganda, Kenya, Northern and Southern Rhodesia, Johannesburg, Durban, Cape Town and Ghana. That his services were appreciated by our members overseas is evident by honours which have been conferred upon him. In 1956 he was made an Honorary Corresponding Member of the Royal Architectural Institute of Canada; in 1957 he was elected the first Honorary Associate of the Royal Australian Institute of Architects; he was elected an Honorary Fellow of the New Zealand Institute of Architects in 1958—and this year he was made an Honorary Member of the Institute of South African Architects.

'He was awarded the C.B.E. in 1949 and in 1958 the University of Durham conferred upon him the Honorary Degree of Master of Arts.

'The older members of the Institute will remember him as a man of great integrity—a loyal friend and cheerful companion, and I know he takes with him in his retirement the good wishes of the whole body of the Institute.

'His intimate knowledge of the various Ministries and his friendly relationship with officials of kindred societies have been of inestimable value to the R.I.B.A.

'I cannot conclude without some reference to the tremendous behind-the-scenes guidance and help he has given to all Presidents during his years as Secretary. I can speak personally of this, having had two sessions as President—and I shall not forget the advice, the tactful guidance, the never-failing courtesy he gave and the fund of information always put at my disposal. These things, added to his efficiency and ability in his day-to-day work, have shown how well Bill Spragg has so completely fulfilled this post as Secretary to our Institute. Those who are Past Presidents will know of what I speak. I send him my most sincere wishes for a happy retirement—he has earned it!'

Presentation of the Royal Gold Medal for 1959 to Ludwig Mies van der Rohe

At the R.I.B.A. 26 May. The President, Mr. Basil Spence, O.B.E., A.R.A., A.R.S.A., in the Chair

THE PRESIDENT: Today is a memorable occasion for the Royal Institute of British Architects. We are honouring one of the greatest living figures in architecture. It is the greatest honour that we can give to a great architect. But this is not an honour for us to bestow, but for us to receive. There is no doubt that Mies van der Rohe has done so much for every one of us that it is the least we can do to recognise him here.

I shall not make a speech. There are people who will speak about Mies van der Rohe before he comes up to receive the Royal Gold Medal. In the fabric of this building, on the left-hand side as one enters, are carved certain great names, and one of the greatest will be Mies van der Rohe.

PROFESSOR SIR WILLIAM HOLFORD, M.A., P.P.T.P.I.[*F*]:

Although I have no personal acquaintance nor association with Professor Mies van der Rohe, you have asked me to join tonight, Mr. President, in paying him the highest tribute which the Royal Institute can offer to an architect. I feel that I do so as a representative, therefore, of thousands of architects unknown to him and yet, as you have said, influenced by what he has done. But to have the chance even of recommending the award of the Royal Gold Medal on this occasion, for sheer uncompromising architectural merit, is satisfying in itself. This is not only an honorific occasion: it is an honourable one.

For 20 years now, some bone-forming property has been circulating in the architectural bloodstream of the world. If this does not represent Mies van der Rohe's own idea of his influence, perhaps it is nearer to what the world feels about him. This was so much the case that last year, in the Toronto City Hall Competition, which drew schemes from all over the world, it seemed at first to the jury that at least 50 out of the 550 designs submitted were from the office of Mies van der Rohe! In fact, he was not a competitor, and that was soon evident.

What was interesting was that the number of those who had tried hard to be like him was equalled by those who had tried even harder to produce something different from what one might call the positive precision of the 'Miesian solution'. In other words, he represents an achievement in architectural development which either has to be understood and accepted or has to be used as a point of departure. It cannot be ignored. That seems to me to give, quite simply, the measure of his contribution to the architecture of our time.

I probably will not be alone this evening in asking 'What next?' This is a question that must occur to anyone who stands, for example, in front of No. 375 Park Avenue or even looks at the photograph of it in the exhibition. It has the air of finality and conviction about it that seems like the end of a chapter.

Only Mies van der Rohe can answer that question 'What next?' In fact, he has done it before—for example, after completing the Lake Shore Apartments in 1951. I would like to express briefly our sense of anticipation of what is to come and to hope that a subsequent chapter will enable him to develop even further a theme which he introduced earlier in his career—namely, the design of a group of city buildings in a great urban setting, where the small fountains, the granite paving and the few specialised trees of 375 Park Avenue could proliferate and expand to the same high dimensions as his architecture.

THE HON. LIONEL BRETT, M.A. (VICE-PRESIDENT):

One of the penalties, or, at least, one of the curiosities, of the time-honoured ceremony is that the recipient of Her Majesty's award finds himself standing prematurely at the bar of history. There is, of course, no prosecution, but he has the frustrating experience of listening to a succession of defending counsel speaking about a person about whom he presumably knows a great deal more than they do, without any opportunity of putting them straight.

But if anyone's place in history is secure and their greatness clear, it is, Sir, yours. If you want a monument, of a sort, look about you, whether it be in London, in Berlin or in New York. Cheap, and sometimes nasty, versions of the glass walls that you were dreaming of in the thirties and twenties are now one of our most useful minor exports. And this is particularly ironical since about the last thing anybody could associate with you is style-mongering or the invention of gimmicks.

The books tell us that your ancestors lived in Aachen, which I think of as the centre still of Western European civilisation, neither Latin nor Teutonic nor Frankish nor Celtic nor anything else. And your role in history, like Luther's, like Goethe's, has been to recall us, particularly us romantics out on the perimeter, to the Platonic Simplicities of our culture.

I fear that we shall deviate again before long. Signs of a counter-reformation, originating in Spain and now rampant in Italy, have already reached this island. I hope we shall resist the new Baroque, as

we did in the 18th century, because to my mind the great need of our time is not esoteric experiment and restless changes of style, but a concerted effort to control our environment as a whole. Architects are inclined to forget how pathetically meagre their little rushlights are in the surrounding gloom, as you will agree, Sir, if you have had a look at London.

Instabilities, ambiguities, frayed nerves and frayed edges are the norms of our existence, and a sense of space, which presumably in the Age of Reason was in the air that people breathed, now has to be carved out of the megalopolitan or subtopian jungle. I am sure that in our task of making these clearings, the calm Miesian principles—again, I think of Goethe—are our best tool. That is why your presence among us is so valuable at this moment, and I hope that we shall make the most of it and learn something of your mysterious personality.

A friend of mine who has some land in hunting country has put up notices wherever two rides meet, saying, in fairly large letters, 'Hunt this way'; but low down he has put a smaller notice, 'Fox *this* way'. I do not know how you have eluded the pack of critics and architectural generalisers among us. But I suggest and suspect that the answer is to be found in these words of one of the greatest women of our time, Simone Weil:

> 'When science, art, literature and philosophy are simply the manifestation of personality they are on a level where glorious and dazzling achievements are possible, which can make a man's name live for thousands of years. But above this level, far above, separated by an abyss, is the level where the highest things are achieved. These things are essentially anonymous.
>
> 'If a child is doing a sum and does it wrong, the mistake bears the stamp of his personality. If he does the sum exactly right, his personality does not enter into it at all.'

I believe, Sir, that that is the way you have done the sum.

PROFESSOR J. M. RICHARDS, C.B.E. [*A*]:

The occasion when we welcome a great man among us is an occasion for particularising the truths about architecture that we have learnt from him. The greatest truth we have learnt from Ludwig Mies van der Rohe is, I suppose, the necessity of truth itself. In his buildings, as in no one else's, we have seen the two interdependent essentials of architecture—space and structure—handled with absolute truth, and he has demonstrated to us that the discipline such truthfulness implies is not a restrictive but a liberating influence.

So much discussion about architecture strays off into matters—and in their way very important matters—that are more the province of sociology and territorial planning and building economics that it is good for us to be reminded occasionally, as we are when we study Mies's work, of what architecture essentially consists of. No one has shown us more clearly how to define space without imprisoning it; how to achieve the perfection of engineering while keeping the means subsidiary to the ends; and how to use every material, visibly as well as functionally, in the way demanded by its nature.

We often talk glibly about the machine age, but the beautiful quality of Mies's work reminds us that good modern architecture does not automatically arise from accepting and exploiting machines. It depends also on the exercise of the imagination, but in terms of the particular resources the age has endowed us with and the particular disciplines it imposes on us.

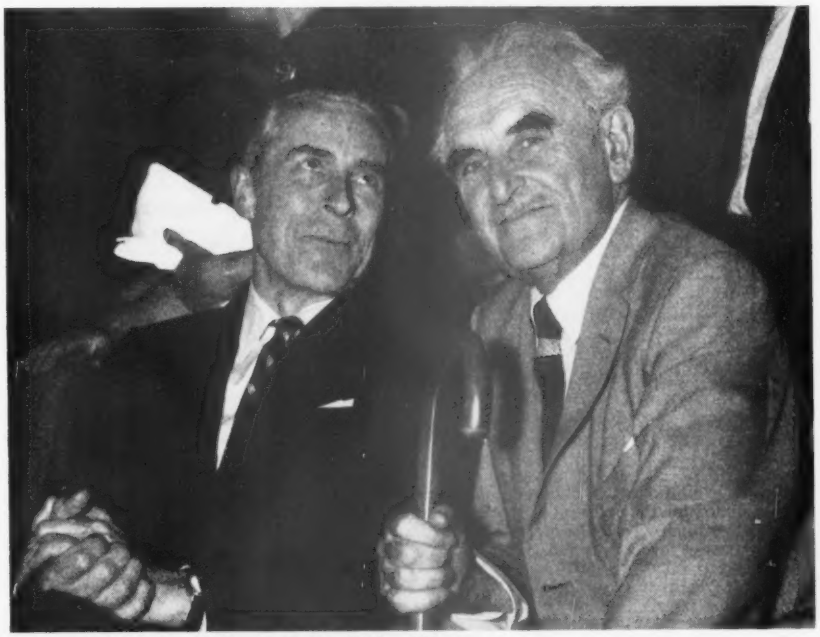
If we look back on his long, undeviating career we see that it has always been Mies's role to assert and demonstrate truths like this. Through the years, he and his work have never changed. But that does not mean that he has not progressed. His progress has simply been from inspiring one generation with his theories to inspiring another with his practice. His projects of the 1920s, and his early executed works like the 1929 Barcelona pavilion, which opened the eyes of so many of my generation, pointed the way once and for all to the qualities in architecture which it was our task to search after. There were others, of course—Gropius, Oud, Le Corbusier—looking in the same direction, and earlier still there were the pioneers like Berlage and Behrens. But it is Mies's particular achievement that he not only taught modern architects what essential qualities to search for: he showed them what they were really like when found.

Because in spite of the fame of his pioneer projects, the important thing about Mies's designs has always been the perfection of their execution. He is no aesthetician. He is essentially a builder. He himself has said that he refuses to recognise problems of form; only problems of building. And in putting this firm philosophy into practice, he has never shown a suggestion of compromise.

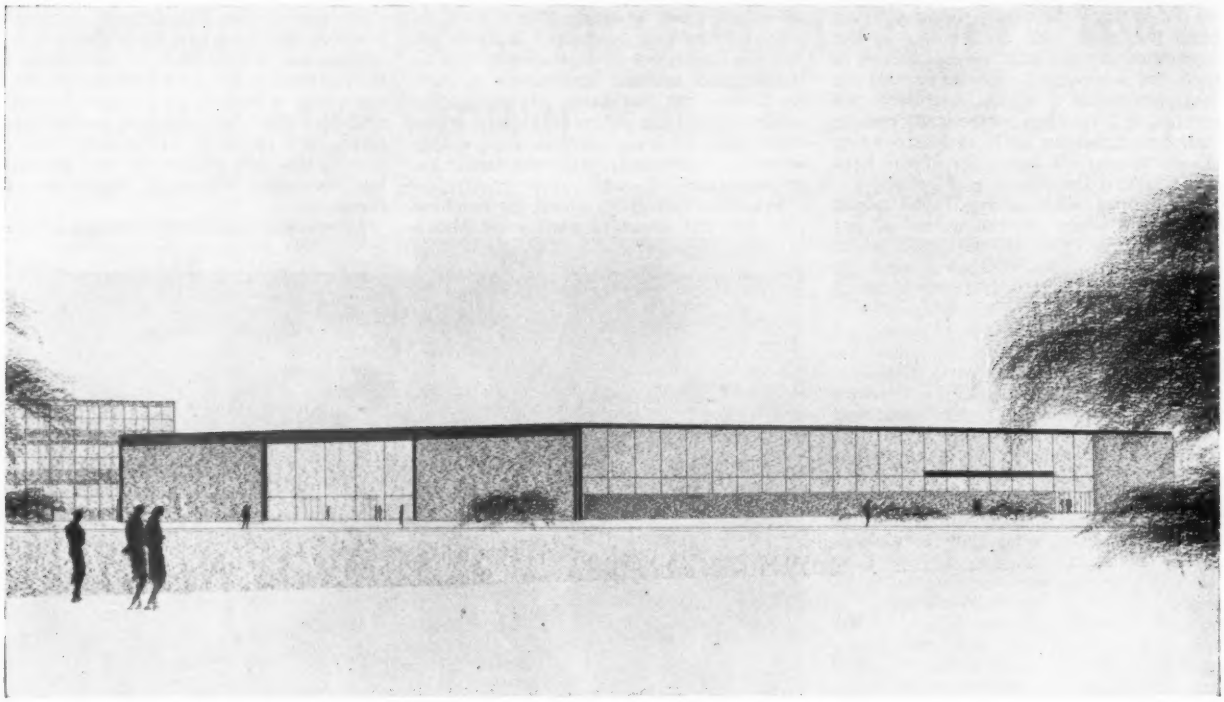
I think it is significant—perhaps for that reason—that certain adjectives, customarily employed in architectural polemics as terms of opprobrium—I am thinking of the adjectives 'academic' and 'classical'—we apply to him as terms of admiration. His work is academic in the exact sense that academies are the repositories of the continuing truths that are independent of taste and fashion, and his work is classical in the sense that it is concerned with architecture's basic disciplines—not with its overtones of emotion and association.

It is an inspiration, as we look across the Atlantic, that Mies has already done there to perfection the things we are still slowly struggling towards here. It is an encouragement for us to see the image of his elegant, crystalline structures reflected in our clumsy curtain walls. And encouraging, too, for all succeeding pioneers, because it is usually the fate of pioneers to watch others complete the work they began. Mies's career is a rare instance of justice: that the man who thought of something first should also be the man who has brought it to perfection.

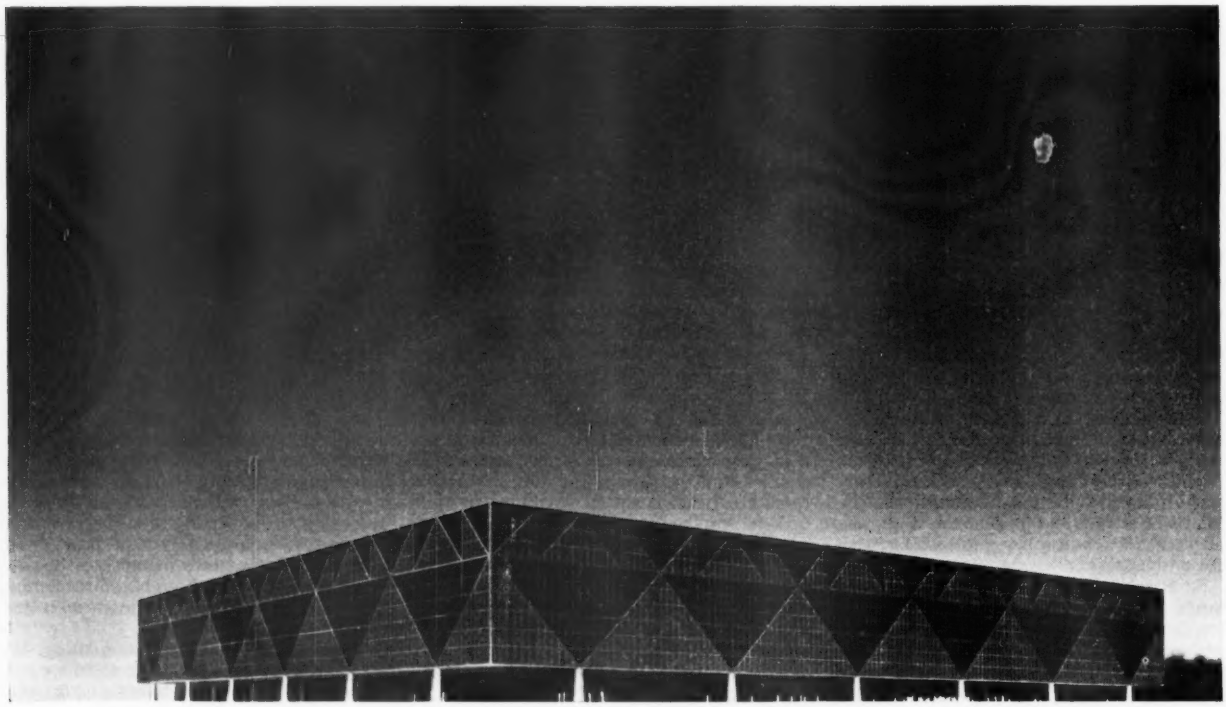
I want to say only one other thing. We welcome Mies van der Rohe as our guest, not only as a great architect and a great



Professor Sir William Holford with Mr. Richard Neutra



From the exhibition of 16 photographs of work by Professor Mies van der Rohe which was mounted for the occasion of the Presentation of the Royal Gold Medal. Above: Illinois Institute of Technology, project for Library and Adminstration Building, 1942 Below: Project for Convention Hall, Chicago, 1954 (model



teacher, but as the living embodiment of the interdependence of the old world and the new. In spite of his greatest works being located on the other side of the Atlantic, he belongs to our side too. Because nothing but the maturity and sophistication of the old world into which he was born could have bred in his imagination the particular ideal—the ideal of a patient perfection—that he has lived with all his life. Before he carried them there, his ideals were quite foreign to the raw pioneering spirit of America. And yet no world but the new could have provided the industrial resources that allowed him to develop those ideals to the full.

So in his buildings the characteristics of the old and the new worlds are thus indivisibly fused, but each has been lifted in the process to a level that neither could have attained alone.

MR. RICHARD LLEWELYN DAVIES, M.A. [*F*]:

Tonight, five of us have the honour to be speaking here about the work of Mies van der Rohe. It is characteristic in any field of art that really great, really important work should have many facets and that each epoch and each individual will learn a different lesson from it. Tonight you will have five different views of Mies van der Rohe's work—but that is only a fraction of what this and future generations of architects will learn from it.

The side I want to talk about, which is one that has profoundly affected me as an architect, is rather hard to define. It is the quality of integrity, the pursuit of clarity and reason in design, a quality that is almost more moral than aesthetic. For me, this aspect of Mies's work has been a source of continuous inspiration. I think it has been so also for most other architects of my generation. It was something that was desperately important for us in relation to the epoch in which we live and work.

Mies himself has spoken of his belief in reason as the basis for all human work. He has said that he throws out everything from his work which is not reasonable, even things that are very dear to his heart. I think this is an important clue to the impact that his architecture has had on us. He throws out everything which is trivial, self-important or insincere. His buildings are a manifesto of faith in the human being and in human reason. As architects we need this faith, which it is very difficult to maintain in the world of today.

For me also, this lyrical expression of faith in human reason is present also in the architecture of Greece, and I believe that this is what explains the very similar emotional impact of the work of Mies van der Rohe and of Greek architecture upon us. Both have the same calmness, the same balance, so complete as to be almost weightless; a perfection which seems almost casual. Both are static; they do not point anywhere, they are not telling a story or making a point. But both have a very deep impact and they do something very rarely achieved by architecture: they make us feel both the wish and the power to seek what is good.

Something of what I have been trying to say has been expressed in another context by W. H. Auden:

'After the external disorder. the extravagant lies, the baroque frontiers and the surrealist police, what can truth treasure or heart bless but a narrow strictness.'

MR. PETER H. G. CHAMBERLIN [*F*]:

Although, of course, it is a great honour to be asked to speak on this occasion, for me it is also a great ordeal, first because, being the fifth speaker, all the best things have been said, but secondly, and more importantly, because I regard it as presumptuous for me to speak about so great an architect as Mies van der Rohe.

But I have one important thing which I should like to say to start with, and that is that I only wish, as it is now becoming perhaps fashionable to employ foreign architects in this country, that he may be commissioned by somebody over here, because that would be the finest example that we as architects in this country could have. In fact, I would go a little further. Everybody in this room probably remembers the many controls from which we have suffered in the last 20 years of one sort or another, including all sorts of restrictions about the export of products from this country and imports to us. It is a great pity that we cannot somehow make it necessary for Mr. Mies van der Rohe to apply for an export licence for his gold medal and make it a condition that it is only forthcoming provided he accepts a commission in this country!

Of course, all architects have a certain number of heroes. I suppose I have about half a dozen world heroes in architecture. I was interested to notice that Mr. Mies van der Rohe is the fourth to receive the gold medal.

I can only comment on some of the qualities of his work which I have particularly admired and which have made most impression on me. I will start by making reference to a remark he made when I was four years old, which was that the object of architecture is to 'create form out of the nature of our tasks with the methods of our time'. It is beautifully, succinctly expressed and to my mind is an exact starting-point for architecture.

I suppose, as an artist pure and simple, his development of ideas about the control of space most easily come to mind. I have particularly in mind the examples which one or two people have already referred to, such as the Barcelona pavilion, the Tugenhadt house and his court houses. I do not know whether it was coincidence that the one which has made so much impression upon us should have been an exhibition pavilion and thus no longer extant; but many architects have, of course, been less inhibited in the development of their ideas

The President with Mr. Richard Neutra and Professor Mies van der Rohe

in buildings which have no permanent intention. But certainly if, as I believe, the object of architecture is to control space, to encompass human activity, I do not think anybody has ever revealed to me as much as Mies van der Rohe.

Secondly, of course, he is to my mind a great master builder, and, again, the art of architecture begins in building. It is the art of building, a theme on which Professor Richards has elaborated. Certainly, with his Lake Shore Drive buildings and the Seagram building, with the assembly of many relatively small volumes of building, I do not think one can possibly do better than apply St. Augustine's comment that so far as his buildings are concerned, their beauty lies in the splendour of their truth.

Another quality to which he certainly opened my eyes was the true character of and the way to use synthetic materials as opposed to the traditional materials such as stone, timber and brick. I have in mind particularly concrete, glass and steel. If imitation is the sincerest form of flattery, there are a number of steel-framed buildings which have been put up in this country which, obviously, would never have been built without his example. That is not to say that they are good, but they perhaps try a little bit and they would never have been attempted if he had not revealed to us what in fact could be done with steel and glass.

On a slightly lighter note, he is the only architect I know of who succeeded in persuading a client of his to build a full-scale mock-up of a building before the actual building was erected. I believe that after that the building was not built! How many of us, though, when any building is completed, wish that it could be pulled down and started again. It is an excellent principle to follow if any clients in the audience can rise to that.

In the world or the time we live in at the moment the particular quality that I so admire in him is his complete fearlessness of the charge of being inhuman. His work completely transcends the comfortable, or, I think, as Giedion once said, the cosy. He never attempts to apply any frill of any sort at all. I suppose, again, that it comes back to the point that he accepts reason as the starting-point of all human activity, particularly in the arts.

I have a record of his voice, to which I have listened several times over, in which he refers to the timelessness of much classical architecture and how it has survived epoch after epoch and still has its freshness of quality. I am quite sure that his architecture will live through many epochs.

Perhaps one of the most vivid remarks which he made in this record to which I have listened was his remark that 'I do not want to be interesting. I want to be good'. Can there be a finer expression than that? I suppose the intensity of his discipline is expressed by his well-known phrase that 'Less is more'—again, a magnificent idea, a magnificent conception.

I expect you are all familiar with the rather waggish remark of the well-known art critic when he first saw the Seagram building. He is reputed to have stopped in his tracks and to have said, 'I have never seen more of less'. I would like to conclude by saying that for my part, as I said at the beginning, I wish that we could have more of Mies and less of others.

THE PRESIDENT: It is my pleasure to call on Sir William Holford and the Hon. Lionel Brett to escort Professor Mies van der Rohe to the platform to receive his medal.

The presentation was followed by prolonged applause.

PROFESSOR LUDWIG MIES VAN DER ROHE:

I wish to thank Her Majesty the Queen for the great honour she has bestowed on me and I would like to thank sincerely the Council of the Royal Institute of British Architects for proposing my name for her approval. I would like to thank, too, the speakers for their remarks and the generosity of their comments. I am so moved that I can hardly think of anything else to say. I am very thankful and grateful.

I was in this country 50 years ago, on my first and my last trip here, to study the great architects of that time. I studied Behrens, Olbrich and van der Velde. I wanted to study Lutyens, Baillie Scott, Voysey and Mackintosh. Those times were very different from today. There were a few people who tried to do something new and find the way. Everybody went in a different direction, so we had to learn from each of them what seemed good to us and what we liked, but there was nothing clear.

I once asked somebody to tell me what architecture was and he replied, 'Do not ask silly questions'. But I do ask them. That was all we could get. We had to start. We learned from a great man and his talents, but we did not get a clear direction. I learnt more from old buildings than from this man—the old buildings with their fine, simple purpose, their fine, simple construction, their marvellous draughtsmanship and wonderful proportion, and unsophisticatedness. That is where I learned. These old buildings have been a continuous inspiration to me even today.

We had to find our way and we had to ask hundreds of questions. We wanted to know what was civilisation, what was culture, and whether there was a relationship. We felt that there was a close relationship, but we did not know what was the truth. We had to search among ancient and medieval philosophy to find the answer to that. The best answer to the question of 'What is the truth?' has been given in *adequatio reis et intellectus*. That is, the whole world.

I have been asked many times, where do we go from here? To those of us for whom architecture is the expression of an epoch, 'Where do we go from here?' does not make sense. Architecture is the expression of the inner structure of our epoch and the slow unfolding of its soul.

Review of the Rose Shipman Studentship 1955[1]

Mr. Reed, who is one of the most experienced conservators in this country, was awarded the Rose Shipman Studentship in 1955 to study the conservation of historic buildings in Europe. He set out to discover all the recent progress in repair technique, not only arising from normal developments in each country, but those due to the special problems due directly to war damage.

He wisely concentrated on work in France and Italy, as even a most cursory examination of the history and development of national repair and conservation organisations in those countries makes it clear that they are the main sources of fruitful study. In addition to visiting these two countries, where he spent a total of six weeks, Mr. Reed spent a further four weeks in Greece, Turkey and Yugoslavia.

The results of his travels and researches are set out in an extremely well-illustrated report in which the work of each country is treated as a separate section. Apart from an introduction, the text is confined to providing information about particular projects and is set out on the same sheet as the photographs of the project concerned. Each section is introduced with a short statement giving the background to the restoration in the particular country and is followed by a number of important projects, which are illustrated by means of drawings and photographs. The accompanying notes are concise and yet adequate to illustrate the projects accurately, and the quality of the illustrations, many of which are from Mr. Reed's own photographs is excellent. All of these have been carefully chosen not only from the point of view of illustrating a particular point but for their own quality as photographs.

The work in France and Italy illustrated varies from the repair of the Rouen Cathedral after bomb damage to the restoration of the Temple of Diana at Nîmes, and from the moving of the famous theatre at Amiens to the very interesting work being carried out to the Arch of Constantine in Rome. In this an interesting new patent technique is being used to repair masonry by means of mastic and bronze screws which have a split nose-cap and are counter-sunk into the masonry. Even most delicate pieces of sculpture are being treated in this way.

Restoration in Greece is illustrated by examples of both Classical buildings and those of the Byzantine period and this section is supported by many fine coloured photographs. Much of the portion on Yugoslavia is devoted to the repair of frescoes, and a particularly interesting photograph shows a typical set of craftsmens' tools used in this work. The final section on Turkey is illustrated by, amongst other items, the conservation of Byzantine mosaics.

W. A. S.

[1] 'The Repair and Conservation of Historic Buildings in Europe', by Alan Reed, B.A. [*A*].

The Role of the Quantity Surveyor during the Design Stage

by James Nisbet, F.R.I.C.S.

The following paper was given at the R.I.B.A.'s Cost Control Conference held at Great Missenden in January 1959. *It contains a number of new ideas on the role of the quantity surveyor which the Cost Research Committee thought worth bringing to the attention of a wider architectural audience. Mr. Nisbet was Chief Quantity Surveyor in the Architects' and Building Branch of the Ministry of Education at the time, but now holds a similar position at the War Office. The paper by Mr. S. A. W. Johnson-Marshall, C.B.E.* [*A*], *referred to below, was given at the same conference. Its title was 'The Architect's Role'.*

The Quantity Surveyor's Role is Vague

When preparing a bill of quantities or a final account the duties and responsibilities of the quantity surveyor are clear cut and well defined and the procedures which he follows are long established and well known. His role during the design stage, however, is not so clear cut or as well known. It has few conventions or established procedures and its scope is ill-defined. Textbooks have very little to say about it except for describing various methods of approximate estimating and these are seldom related to the context in which they should be used. The R.I.B.A. Cost Research Committee have shown[1] that while a variety of cost control methods exist they have been designed for different circumstances, and no two methods appear to satisfy the same set of principles. We can assume then with some assurance that cost control during the design stage is still in its early formative stages. This in brief is why the quantity surveyor's role during the design stage must appear vague and ill-defined and why this paper must be regarded as a very preliminary exploration of the subject. What I have to say, therefore, should not be regarded as a recommended or even a possible course of action, but merely a theoretical and very tentative study of a problem which has been puzzling us all for some time.

Why after hundreds of years of architecture should we be only in the formative stages of cost control? The answer of course has been given by Mr. S. A. W. Johnson-Marshall. Buildings have become larger, more complex and more expensive. Our clients have become more exacting. Building costs have been scrutinised more closely and with greater skill and accuracy. These among other factors have made the architect study the economy of his design with greater care and in more detail, and since the ultimate economy of a building is decided during the design stage the architect has turned his attention to cost control procedures and *invited* the assistance of the quantity surveyor.

In this situation it is only the degree of emphasis which is new to the architect, but the quantity surveyor is presented with quite a new challenge which, may I venture to suggest, represents an historic feature in his evolution, from the simple 'measurer' of the late 18th century. He is, in fact, now being invited to integrate his skills with those of the architect, where previously he was more concerned with meeting the builder's requirements. A brief glance at the quantity surveyor's history will show why this invitation appears to have such a disturbing influence.

In the days of Sir John Soane there was no general contractor and the architect was responsible for preparing and agreeing the final accounts for each of the separate trades. This work was usually relegated to the pupils or to a clerk and as a result the accounts were not properly prepared. The tradesmen soon became dissatisfied with this arrangement and they decided to employ their own measurers to look after their interests. This then was the birth of the quantity surveying profession as we now know it.

During the first half of the 19th century the number of quantity surveyors increased substantially, assisted by the expansion in building activity around London and by the introduction of the system of general contracting. By the 1880's the techniques of preparing bills of quantities had reached a high standard of efficiency and it had become customary for only one quantity surveyor to be employed to prepare the quantities.

At first the invited builders appointed and paid for the surveyor. Later, with the object of maintaining secret tendering, the choice of the surveyor was transferred to the architect, but the builder still paid the quantity surveyor whose fee was included in the tender and allowed to the builder in the first certificate.

During the first half of this century quantity surveyors turned their attention to standardising their methods of measurement and conditions of contract, and gradually with the increase in public clients they came to be appointed and paid direct by the client. So we arrive at the present position when the quantity surveyor is recognised as an independent professional practitioner with considerable skill and experience in measuring and pricing building work. A practitioner whose main function is still the preparation of bills of quantities but who is also turning an eye to ways and means of improving his services to society. Recently, for example, the R.I.C.S. have been encouraging quantity surveyors to take a wide interest in cost control procedures through the activities of the Cost Research Panel, and in the years immediately after the last war quantity surveyors had already recognised the fact that their approximate estimating methods would have to be improved. Since 1950 they have taken active and energetic steps to bring about the necessary improvements and by so doing they have recognised that the next logical step in their development is to extend their services to the architect and the client.

The implication of this may be considerable, for the quantity surveyor may have to adjust himself to a different mental approach and to different procedures which may lack the down-to-earth reality of the builder's world. The prospect is at once both frightening and enticing. Frightening because there may be the danger of the quantity surveyor losing some of his independent status for which he has worked so long and so hard. Enticing because he has been offered a sphere of operations which promises to be more creative and intellectually satisfying. Many quantity surveyors would like to see a university faculty of quantity surveying, but the suggestion has received little support, for it has been argued that the profession has little intellectual content. Here now is the possibility of a task demanding a level of intellectual ability which may open the university gates to future generations of quantity surveyors.

The promise, however, has yet to be fulfilled, and fulfilment will not be easy. The quantity surveyor, for example, is unable to work out his role by himself for he has no contractual mandate to do so. As matters stand at the present time he has no authority to control costs, and when he advises on costs it is generally on an informal and unpaid basis. The architect alone is entrusted with the responsibility for the cost of a building and only he can exercise control. The quantity surveyor's role therefore is entirely dependent upon the architect's wishes which may vary considerably from a request to act as co-designer to no request at all. Yet if costs are to be controlled the quantity surveyor should be brought into closer touch with the design process for he is the recipient

[1] R.I.B.A JOURNAL September 1958.

of the very large volume of cost data contained in priced bills of quantities. The cost of complete buildings, of structure, of services, and materials are all accumulating in his hands and the quantity surveyor would be doing less than his duty if this information was not fed back to the design process.

There are of course difficulties. There is still a body of opinion, for instance, which believes that the architect should not see the priced bill of quantities—but even if he does it is not an easy document for him to understand. There is the difficulty of processing the information to suit the architect's design requirements. There are problems of communication if the information is not to be misleading, and the biggest problem of all is the quality of the data itself. But in spite of all this there seems little doubt that if a suitable procedure could be found and an appropriate division of responsibility agreed the quantity surveyor could make a significant contribution to good architecture and economical building.

One of the first items we might examine is the costing process and here we come up against the chicken and egg dilemma. Do we design first and cost afterwards? Or is it the other way round? Or do we use some method in between? In this connection it appears that Mr. Johnson-Marshall is for the middle way and that at the reasonably earlier stage a cost should be fixed, which with several other factors will govern the choice of structure and components. It is on this assumption that we might examine the costing process, but before doing so I should like again to emphasise that we shall be venturing upon relatively unknown territory and that any propositions which may be suggested are very tentative.

The costing process depends upon the sequence and the nature of operations which the architect adopts to translate the client's ideas into drawings and specification. We all know that the architect prepares a sketch design and then follows this up with working drawings. We also know that designing a building is not as simple as all that, but no detailed study of the architect's design method appears to have been carried out.

The Ministry of Education however, in Building Bulletin No. 4, have suggested, and the Institute of Advanced Architectural Study have accepted, as a working hypothesis that the architect's design work can be divided into four phases, e.g.

BRIEF	INVESTIGATION	DESIGN	WORKING DRAWINGS

In practice, of course, these phases are not clear cut divisions for they merge into one another so that their boundaries cannot be easily defined.

Now Mr. Johnson-Marshall has already pointed out that cost plays its part throughout the design process. In the first instance influencing the size of the project and its general conception, then later indicating the type of structure and affecting the choice of services and finishes. The cost therefore is a continuing influence but it has two distinct stages. During the 'brief' and 'investigation' phases the client and architect have the joint responsibility of deciding just how much the project should

BRIEF	INVESTIGATION	DESIGN	WORKING DRAWINGS
Approximate Estimating		Cost Planning	

cost, or alternatively of deciding what size and quality of building can be provided for a given sum. During the 'design' and 'working drawings' phases the architect has the responsibility of designing a building so the tender will not exceed the sum previously agreed. The costing process therefore has two distinct parts, (1) the determination of total cost, and (2) the costing of the design within the total sum.

In a way this is not unlike household budgeting. The husband has to decide what proportion of his salary he can reasonably provide for housekeeping. In deciding what the amount should be he does not usually prepare a menu or indeed a variety of menus and then have them priced by his wife or the grocer before deciding how much he will allow. His decision is based on what he considers to be a reasonable standard of living and the relative claims of other items on his salary. When he has decided what the sum should be he will expect his wife to keep within the allowance. The wife in turn budgets her expenditure and decides how much she can afford to spend at the butchers, the bakers, the grocers and so on.

Of course it is not unknown for housewives to submit claims at the end of the month, but this, I think, probably enhances the analogy rather than detracts from it. So both in budgeting for building or for housekeeping the underlying procedure is much the same and resolves itself into two stages: (1) how much to spend; (2) which way to spend a predetermined sum.

Recently there has been some confusion about the two terms, 'approximate estimating' and 'cost planning'. There is, for example, a tendency to assume that they mean more or less the same thing, but that 'cost planning' is a smarter and more fashionable term. Or again, they may be considered as rival methods, the one trying to oust the other, and again it is sometimes considered that cost planning is a device intended to depress the cost of building irrespective of quality. I should like therefore to take this opportunity of dispelling all these misconceptions. The two stages of the costing process which I have just described can in fact be labelled 'approximate estimating' and 'cost planning', e.g.

The first stage (i.e. when it is decided how much to spend) is the approximate estimating stage and where conventionally the technique of cubing has held pride of place. The second stage (i.e. when we decide how we are going to spend the budget) is the cost planning stage.

It can be seen therefore that the two terms are not synonymous and that they mean different things and apply to different aspects of costing process. Neither are they rivals for they are mutually supporting and each is dependent upon the other. The approximate estimate is not likely to be substantiated by the tender without cost planning, and cost planning loses much of its purpose if the final total cost is unimportant. Cost planning has in fact introduced a procedure into the design stage where previously nothing systematic had existed. It is not therefore trying to supersede anything which had previously existed and is complementary to approximate estimating.

Nor can cost planning be described as a means of reducing or depressing costs. It is simply and solely a means by which the architect can design a building within a budget in the same way as the housewife must arrange her purchases if she is not to exceed her housekeeping allowance. It is during the approximate estimating stage when the decision is made to build down or up to a cost, and cost planning is important in both cases. In fact it may be more important when the client has agreed to a generous budget, for he will expect to get sound value for his investment and he

BRIEF	INVESTIGATION	DESIGN	WORKING DRAWINGS

The character of each phase is as follows:—

Brief	Investigation	Design	Working drawings
Receiving and obtaining adequate particulars of the client's requirements.	Preliminary study of possible forms of constructions, etc., and the preparation of the sketch plan.	Detailed study on draft drawings of all parts of the building. At the end of this phase the architect should know exactly how the building will be put together in every detail.	A routine process of turning draft drawings into final drawings.

may be rather peeved if a large proportion of his investment has been squandered on over-designed structure. Cost planning therefore is necessary whenever the architect has to provide value for money.

So much for the distinction between approximate estimating and cost planning. Let us now look at the characteristics of these two procedures in more detail.

Approximate Estimating

Approximate estimating is the process of determining during the 'investigation' stage what the cost of a building should be. At this stage no constructional decisions will have been made and planning will still be in a preliminary state. The calculation must therefore be based on the client's fundamental requirements and on the cost of meeting these requirements in other buildings.

The methods normally used are well enough known, e.g. cubing and approximate quantities, but other methods, primarily financial, have been brought into use which will require both the architect and the quantity surveyor to take another look at their customary procedures.

For example, not a few clients can quickly determine what they can pay for their buildings by reference to their bank account. Again, the likely rent which office accommodation can command in a given district can determine the capital sum for which a building must be erected. Methods such as these, and no doubt there are others, determine the approximate estimate or cost limit *before* the architect does any planning. These methods, therefore, are quite distinct from our usual methods, which are used *after* the architect has produced a preliminary plan and specification.

The new methods will require the profession to interpret a sum of money in terms of units of accommodation graded, rather like eggs or mild steel tubing, according to quality *as well as* working out the cost of the accommodation required as we have done in the past.

These new methods have also been encouraged by the emergence of new types of buildings and the desire to develop new constructional techniques. In the case of new building types, no previous cost experience was available from which cubic costs could be obtained, and in the case of new structural systems it is not possible to prepare approximate quantities for components which have not yet been designed. For such reasons the customary methods have been found unsuitable, and a new approach has been required.

It will not be necessary to remind this audience of the object of approximate estimating, i.e. to provide the client with a reliable assessment of the ultimate cost of his project. Upon the amount of this assessment he will decide whether or not to build, and this decision is an important one. In fact it may be the most important financial decision of his life. If he decides to build he will expect the tender and final cost to compare closely with this assessment. Our estimates, therefore, must be prepared with the greatest possible care and attention, and should be realistic forecasts of the tender cost of the project. This is how the client regards them, but do the professions regard them in the same light?

Occasionally the professions grumble at clients because they remember the first approximate estimate, as if to suggest that the figure, once mentioned should be instantly forgotten. But why should it not be remembered if the client has made a decision on it, and why should he not expect the architect to keep within the figure stated?

Approximate estimates are, however, often prepared in too much of a hurry and without giving them the consideration they ought to have and we rarely feel committed to return a tender which agrees exactly with the estimate. One well-known textbook, for example, when dealing with approximate estimates, refers to them as being necessarily vague.

This is a ludicrous situation, and it suggests that the client and the building professions are tuned in to two quite different wavelengths. The client is regarding us as professional experts who are providing reliable advice upon which he can make a decision, and yet the professions are unable to give him the assurance that he is asking for.

It is easy enough to criticise, but how are we to remedy the situation? There are four things which we might do.

First, we should convince ourselves that we shall provide the client with an estimate which we are prepared to stand by. This means that we should consider ourselves morally bound to provide a project whose tender cost is within very close limits of our estimate. Secondly, to provide this self-assurance the architect must have a full knowledge of all the client's requirements, and he must develop techniques and take steps to find out exactly what they are. The architect cannot expect the client to provide all the information on a plate because he has rarely had any experience or training in being a client, nor can he be expected to know what type of information the architect requires to prepare his design. Thirdly, when the requirements have been decided upon and a sketch plan prepared, the quantity surveyor should be given adequate time to prepare a carefully considered estimate. We must get rid of the impression that the quantity surveyor can prepare an estimate on the back of an envelope between gins. Fourthly, when the estimate has been completed it should be checked against the cost of other buildings to see whether it is reasonable. If we don't do it the client will, for few of them will be prepared to accept our figures blindly and without making some attempt to check them from other sources.

Even if we are successful in meeting these four requirements we may still find that we have to explain our estimate to a client, and this may well be a trying experience, but a part of our difficulty has been in finding a satisfactory method of making building costs intelligible to the layman. Of course this problem is fraught with considerable difficulties, but somehow we should find a way to break through the barrier of technical jargon. The complicated bill of quantities and the simple cubic cost convey very little to the client, and we should break down the cost into convenient parcels which can be easily carried in the mind, and which can be examined and compared with similar parcels in other buildings. Comparing the actual costs of buildings in detail is a subject which most of us fight shy of. We argue that the cost of two buildings can rarely be compared unless they are practically identical. But to accept this argument would be to deprive ourselves of a great deal of valuable cost information and the opportunity of learning from the experience of others. We should try, therefore, to overcome the difficulties of communication which are involved, and if we could also achieve the four-point charter for approximate estimating both the architect and the quantity surveyor might find their professional lives a little less harassing than they are at present.

Cost Planning

I do not propose to deal with cost planning in any detail since it has been fully treated elsewhere, and shall confine myself to recalling a few of its main characteristics. Its object, as most of us know, is two-fold. First, to obtain value for money, and secondly, to control the cost of a building during the design stage so that the tender cost will not exceed the cost limit. The first is achieved by adopting a procedure which allows the architect to spend the money available on those elements of a building which will provide the client with the greatest benefit. The second is achieved by the quantity surveyor by checking the cost of each element as it is designed.

Cost planning begins to operate as soon as a cost limit has been set. This limit may be imposed at the outset of the job, as in educational building, or when the approximate estimate has been accepted as reasonable for the type and quality of the building envisaged. The first step is, of course, to prepare the cost plan, which bears this description because it represents the architect's planned expenditure. This is done by allotting a sum of money to each element of a building depending upon its relative importance to the whole. Three points may usefully be made about the cost plan.

First, the cost plan must be prepared *jointly* by the architect and the quantity surveyor. It could, of course, be prepared solely by the architect if he had the cost data available, but the quantity surveyor must depend upon the architect for setting the standards of quality which the cost targets should cover and which the architect must obtain in his design. As quality standards are a matter of subjective judgment, it is important that the architect and quantity surveyor develop a common basis of assessment, and this can be encouraged

by joint visits to buildings, when the quantity surveyor can learn what the architect's judgments are and the architect can learn what the costs are from the quantity surveyor. The use of cost data from buildings with which they are both well acquainted is obviously the best source for preparing a cost plan.

Secondly, the elements to which costs are assigned must be related to the way in which an architect builds up his detailed design. In some cases an architect may consider the enclosing walls as an indivisible element which he must design as an entity, while in other cases it may be desirable to have two elements, e.g. one for windows and another for solid cladding. It is possible, therefore, for different types of buildings to have different sets of elements.

Thirdly, when allotting a sum to an individual element the architect would not necessarily, or even usually, allow a sum to provide for one particular construction or material. The allowance may be chosen from the cost analysis of another building or from approximate quantities which have been taken out and priced. But whichever method is adopted the architect would not be bound to the same material as appeared in the analysis or in the estimate. The intention would be to provide an allowance which would meet the functional requirements of the element to some defined standard of quality. By this means the architect would not be tied to any preconceived ideas, and he would be free to make a decision at some later and more suitable stage of his design.

This decision, however, should be made during the 'design' stage, i.e. when the building is being worked out in detail on draft drawings, and is subject to the cost checking procedure, which, incidentally, distinguishes cost planning from our customary costing procedures.

The cost checking procedure is vital to cost planning for it is the teeth of the whole idea, and provides the means by which the cost design is controlled. As each element is designed on draft drawings, the architect's actual proposals—as opposed to tentative suggestions—are passed to the quantity surveyor, who prepares an estimate based on approximate quantities. If the estimate should exceed the cost target adjustments should be made to the design until the cost target is achieved. If the estimate is less, then a better quality can be provided, or the saving can be used to improve other elements. When all the elements have been satisfactorily checked the working drawings can be prepared without fear of substantial revisions, and both the architect and the client can be reasonably confident that the tender will not exceed the approximate estimate or cost limit. The quantity surveyor may also be saved the unpleasant task of preparing a reconciliation statement to justify his preliminary estimate.

To many architects cost planning may appear to be rather a harsh and anti-architectural discipline. Discipline it certainly is, but it is a self-discipline, for the architect is party to the approximate estimate and he is entirely responsible for the cost plan. In fact it is only assisting him to discharge a responsibility which the client has always expected him to bear, i.e. to design to his own approximate estimate. It is also a discipline which must be accepted if the professions are going to offer any real competition to the all-in service, for one of their main attractions is a firm price at the outset and no subsequent increases.

While acting as a discipline the cost plan also grants more freedom, for the architect knows how much he can afford to spend on each part of the building and he can more readily decide which technique, material or finish he can incorporate into his design without the fear of landing himself in cost troubles when the tender comes in.

Many of us may have had doubts about the value of cost planning and cost analysis in view of the instability of builders' prices and tenders. The list of causes giving rise to this instability is extensive, but there is no doubt that they also affect all forms of professional costing so that if they are used as arguments against cost planning and cost analysis they must also be used against our customary methods of estimating.

Cost planning, however, does not ignore such difficulties but allows a margin or buffer to accommodate their effects if they should all be unfavourable to one job (see Building Bulletin No. 4, paragraph 59). On a similar note cost analysis, as it has been developed during the last few years, does not pretend to be any more than a case history of the cost of a single job, the details of which must be interpreted when applied to another job in the same way as the report of a law case must be interpreted.

It has also been suggested that it is not the builder's tenders which should be analysed but his actual costs. At the present time this suggestion appears to be both impracticable and unrealistic, for the only costs which are available to the professions are those made available in priced bills of quantities, and the client, after all, is mainly interested in what he has to pay and not what it has cost the builder.

This statement, however, does not in any way reflect upon the excellent work of the Building Research Station, whose study of the cost of house building was based on builders' actual costs. This study was of a fundamental nature, aimed at influencing builders' methods and their costs rather than finding a method by which the architect could better control the cost of his design under present circumstances.

Another problem which has worried many is the cost of cost planning. How long does it take? How much manpower will it absorb? Can an extra fee be charged? These are the questions which are sometimes asked, and sometimes they have been answered by another question. Can we afford not to do it in the face of competition from the all-in service?

But to be more specific, there can be no precise answer to any of these questions because the amount of cost planning will depend upon the type and size of building, and how different it is from one's normal practice and experience. In the case of development projects, such as those undertaken by the Ministry of Education where every part of the building was designed from first principles, the cost of cost planning is substantial but nevertheless vitally necessary. In the case of an architect who modifies a well-used design and specification the amount of cost planning is probably nil. As can be readily deduced, the amount of time spent on cost planning can vary considerably between these two extremes. But whatever it costs it looks as if it will have to be done, but there is now the possibility that punched card machinery may help us to win the time we need.

Effects on the Quantity Surveyor

If we are to accept detailed cost control during the design stage as a necessary part of our professional expertise, it is likely to affect the quantity surveyor to a greater extent than the architect. As I indicated at the beginning of this paper, the architect has to cope primarily with an increase in emphasis, but the quantity surveyor may have to cope with more fundamental changes.

We have seen that all, or most, of the quantity surveyor's procedures have been conditioned by his historical connection with the builder and with the latter's requirements. His methods of estimating have been derived from the costs which the builder uses to calculate his tender, and these are related to units of work and material. This is so because the builder is only concerned with erecting a building and calculating its cost. He is not concerned with the functions of a building, the way it will be used or the physical standards it must reach. He is presented with a scheme for which all the components have already been selected, and as far as costing is concerned his responsibility is to attach a price tag to each selected component.

It has been this type of upbringing which has forced quantity surveyors to demand drawings and specification before preparing estimates or offering cost advice, and to maintain that the only reliable method of professional estimating is by preparing approximate quantities. But approximate quantities cannot always be prepared, and are rarely possible for specialist work, services and new constructional techniques during the early stages when the client is making up his mind whether or not to proceed with a project. But the client wants some assurance about the cost of his project before committing himself, and it is this situation which has forced us into relatively crude methods.

The information available at this stage (i.e. when the architect has obtained an adequate brief) is restricted to the client's basic requirements, and it is to these requirements that the architect and quantity surveyor are being asked to attach an estimate of cost upon which the client can safely make a decision.

Whether we can ever arrive at a point when we can relate costs to the basic requirements of a building in terms of functions and standards is a debatable subject, but it may well be the ultimate goal for which we ought to strive. In the short term, however, we must accept more limited objectives but there seems little doubt that the quantity surveyor must attempt to interpret the client's requirements and the architect's ideas in terms of cost without an intermediate stage involving drawings and specification.

We must try, somehow, to relate costs to quality and performance, and perhaps the first stage is to develop our techniques of comparing the *actual* costs of different buildings irrespective of size, shape, style or construction. There are, of course, all sorts of difficulties, and it is often asserted that costs cannot be compared unless the buildings concerned are almost identical and constructed under similar conditions. We are sometimes amused, and often exasperated, when the layman asks us to explain why one type of building should cost more than another. But we should do well to remember that comparison is the only method by which a client can judge the economy and effectiveness of our efforts, and that our mysterious estimating systems are of little assistance to him. We must therefore devise a method of comparing costs which will replace mysterious art by science, and opinion by fact, so that both the client and ourselves can be provided with the ascertainable evidence from which we can draw the right conclusions.

The quantity surveyor is sometimes regarded as the guardian of the client's purse by making sure that the builder's prices are fair and reasonable. But the advantage gained by keeping a watchful eye on the builder is small compared with what can be accomplished during the design stage by the architect if he can be given the costing service he needs. And the costing service which he needs is one which provides cost data in the terms and in the manner which he can readily apply to the creation of his design.

The bill of quantities, however, is altogether too complicated a document for the architect to use easily, and so he is unable to get the data for himself. The quantity surveyor, on the other hand, is probably insufficiently informed about user requirements, architectural theories and physical standards to re-cast the information to the architect's requirements. If, therefore, we are going to achieve the control over costs which we are looking for, it appears that the architect and quantity surveyor must co-operate more closely and continuously during the design stage. This proposition seems to be supported by the R.I.B.A. and the R.I.C.S., who have recently formed a Liaison Committee to link their two research panels.

But if we are to get the maximum value from this co-operation both architect and quantity surveyor must approach a job from the same point of view and with the same objective. They will have to become like Rawicz and Landauer, playing separate notes on different instruments but their close association and understanding of one another producing a result which exceeds the sum of their separate efforts. Such a close association could, in the long run, lead to an amalgamation of architects and quantity surveyor in one firm which, after all, is only an extension of an existing situation where the best results are obtained when separate firms of architects and quantity surveyors have been working together over a period of years.

With closer co-operation and association would come shared responsibility and the quantity surveyor's responsibility would be for the cost of a project. Responsibility for the approved estimate would, of course, be a joint responsibility and not as it is at the moment, when the architect accepts full legal responsibility although the estimate may be prepared by the quantity surveyor. Thereafter, responsibility for the cost of the project meeting the approved estimate would be with the quantity surveyor.

To some this may appear as if the architect would be losing control of the design to the quantity surveyor, but this would not be the case. The quantity surveyor's only task would be to see that the total cost did not exceed the estimate. How the money available was distributed to the various elements and the choice of constructions, materials and so on would rest entirely with the architect. He would therefore have all the freedom that he now has, plus the added advantage that he could design with greater confidence since he would know that he would receive early warning if the costs were likely to go wrong. The terrible tension of tender opening should therefore disappear.

To some quantity surveyors such a proposal might appear to undermine their independence, but others might welcome the increased responsibility and the resulting increase in status and prestige. In fact, it might be an interesting experiment for a client to ask the quantity surveyor to be responsible for the tender coming within an agreed amount.

From time to time attention is drawn to building practice on the Continent and in America, and suggestions have been made that the British quantity surveyor and his bill of quantities is an unnecessary overhead on the building industry.

Such a view might be acceptable if it was known that costing in these countries was as good or better than our own and that we were doing something which was unnecessary. However, for 150 years bills of quantities have been prepared and increased in use. This would not have occurred unless there was a genuine requirement for them in the industry. The bill, after all, is simply a catalogue of components and every industry needs this to calculate the cost of its product.

Sometimes quantity surveyors themselves are a little fearful that the increased use of prefabricated constructions and a decrease in the volume of competitive tendering might reduce the need for their services. If their only function was to prepare a bill and its only purpose was to obtain a competitive tender there might be some grounds for their apprehension. But this is not the case, for in addition to the value it has for the builder it serves two other important functions.

First, the priced bill of quantities is the only means by which the architect and the quantity surveyor can satisfy the client that he is paying a reasonable price for the components comprising his building and included in the bill.

Secondly the priced bill is the main source of cost data which the professions have available to them. Without it they would be ill-equipped to advise on costs and to design economically.

For these reasons, together with the builder's requirements, the bill of quantities will always be required. The quantity surveyor, therefore, should make it his duty to see that he is always supplied with a priced bill of quantities. By this means he and the architect can satisfy the client that he is getting value for money, and that they are getting the data which they need. If the quantity surveyor is best qualified to prepare these bills of quantities (and there seems little doubt that he is) then he will continue to prepare them while laying the foundations of a new and probably more important function.

The quantity surveyor, therefore, need have little fear of the future. Bills of quantities in some form or another are safe. His role in the design stage, while yet novel and vague and rather difficult to grasp, has a promise of greater responsibilities and intellectual satisfaction. The obstacles and difficulties which are only too apparent will diminish as they are tackled with energy and enthusiasm. The costing process will have to be re-examined and a distinction made between approximate estimating and cost planning. New costing techniques must be worked out in conjunction with the architect, which may require some modification to the traditional relationship between the professions. But if all this can be accomplished successfully both the quantity surveyor and the architect can look forward to a future full of challenging opportunities and expanding horizons.

'The Living Town'

THE 'LIVING TOWN' SYMPOSIUM, *held at the R.I.B.A. on 22 May, was an interesting and rewarding meeting, at which a number of provocative ideas were aired on the theme of Replanning and Renewal.*

About 400 people heard Mr. Arthur Ling [F] suggest an extension of housing subsidies to private as well as public developers, and Mr. Peter Chamberlin [F] call for 'less money on unproductive fireworks and more on creative town planning.'

A report of the summary by the Hon. Lionel Brett of the day's proceedings is given below.

It is hoped to publish the printed report of the proceedings at 7s. 6d. as soon as possible.

The Hon. Lionel Brett (Vice-President): I shall make no excuses for the almost impossible job in front of me, but I think it may be helpful to you all if I try to get the questions raised into some sort of shape, so that we can go away with the feeling that this conference has put forward certain clear ideas.

So I have divided the day's discussion under four headings. The first is *individual responsibility*, the responsibility of us all as citizens and not as councillors or architects or anything else in particular. Mr. Percy Johnson-Marshall talked about the drowning girl who slaps one in the face when one wants to save her. We have to take the responsibility for saving that girl, even if she does not want to be saved; otherwise we shall have girls drowning every day! It is a debt of honour that we owe to English history. Our ancestors got rich by exploiting this country, and it is our business to put that money back into our physical environment. I think all the speakers would agree on this point. If we accept that responsibility, we have to learn to use our eyes and to evaluate. Sir Hugh Casson said that judgment was more important than justice and that we have to learn to go about with our eyes open. It is the responsibility of all of us to try to do this.

The second is *leadership*. Here I think that I must speak primarily to our elected representatives who are our responsible leaders in this affair. A division has to be made here between central government and local government. Professor Robert Matthew called our attention to the dereliction and desertion of planning that has taken place in recent years. We have no national plan, we have no idea what the Government intends in the way of national development as a whole and where it wants our population to go. We have lost a great deal of research and strength at the Ministry of Housing and Local Government, which used to give splendid advice in the years after the war. We need, he said, a new department in the Ministry which will initiate research into the complicated problems of urban renewal. We need to use the sociologists, to get back to the atmosphere of construction and hard thought which existed in this country during and just after the war.

We need from the Central Government money, housing subsidies, as Mr. Arthur Ling suggested, for all comprehensive redevelopment areas, these subsidies to go both to public and to private developers. Other countries can do it; why cannot we?

We need, Mr. Peter Chamberlin said, a Government which is prepared to underwrite experiment, and take some of the burden of risk off local authorities. We need, as one speaker put it, less money spent on fireworks and more money spent on cultivating our garden.

At local authority level, still on this theme of leadership, Mr. Richard Edmonds gave a most inspiring call to his fellow-members of local authorities to exercise the patronage which they alone can give to planning, architecture and all the arts. They must set the example, he said; their buildings must be the best buildings, and the way they finish and equip them must be the best in the town. Magdalen Street, Norwich, is an example of the lead which local authorities can provide, and which will grow once the seed is sown. Mr. David Percival showed how leadership at local authority level could be used to bring together public and private developers, simply by the force of imagination of the people at the centre. This quality of imagination in the technical people in the local authority office is catching, and if everybody knows there is somebody there with that power and that vision, all sorts of people will be found to come in and do their bit.

Professor Matthew made the essential point that we must now think once again of planning and of urban renewal not in a restrictive but in a positive sense, not as a matter of rules and regulations and bye-laws, but as a great creative enterprise.

That brings me to my third heading, which I suppose I must call *technique* and under which I speak primarily to the professional people here. I can only give a jumble of ideas which have come before us today, all of the greatest interest and importance, and all of which I should like to see recorded and thought about.

Professor Matthew and Mr. Hubert Bennett spoke of the necessity for regional planning of our conurbations, and the same point was raised in the discussion. We must take the opportunity of the new boundaries which are on the way to make sense of our planning areas, and achieve the regional planning of these great urban conglomerations. Professor Matthew also spoke of the need for research at universities all over the country.

Mr. Ling claimed that town planning can never be truly effective without public ownership. He also showed very clearly that green belts, which everybody believes in, and which now, broadly, exist, are meaningless and are bound to fail unless combined with urban renewal: the two go together and you cannot have one without the other.

The theme of competition among developers came up in both papers and discussion. It is a controversial theme, and I hesitate to pronounce judgment on it, except to say that here is a tool which can be both used and abused. Another tool at the technical level mentioned by Mr. Bennett and Mr. Chamberlin was multi-level circulation, separating the pedestrian and the motor car, so that the pedestrian can look about him and enjoy what he sees.

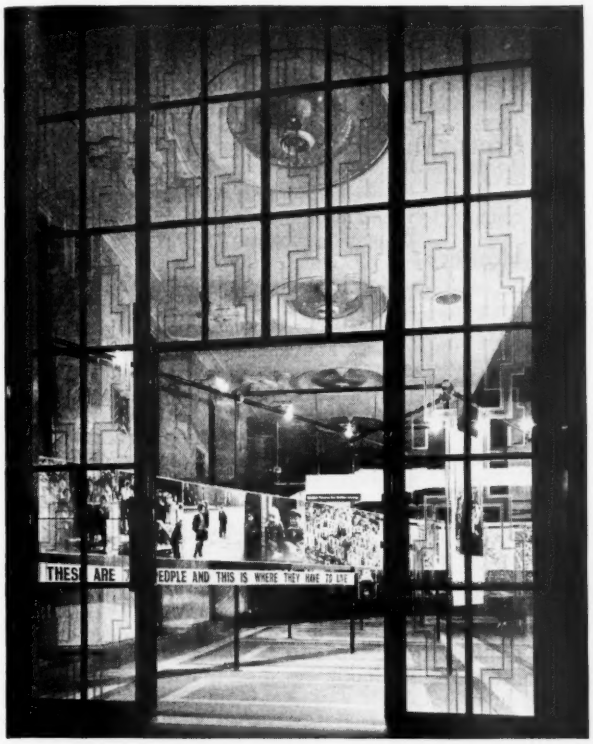
We were asked in the discussion (by Mr. Michael Dower) to use the experience of the New Towns particularly in deficit financing, and we were asked whether or not some of the profits of the New Towns could be used to finance some of the old, on the principle of taking the rough with the smooth. It was also suggested that the New Town could well come inside our great cities, that we could build New Towns within the suburbs, loosening at the centre and thickening out at the fringes, thereby avoiding further spreading into the countryside.

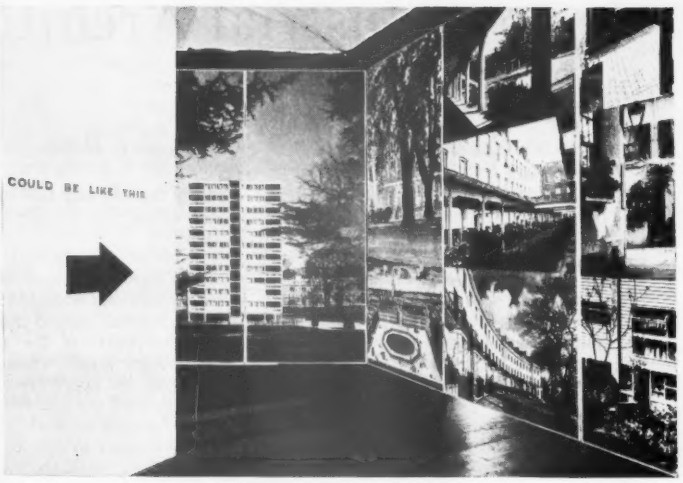
The last heading or theme is that of *unity*. Mr. Chamberlin said that we were in danger of substituting boundaries of administration for boundaries of property, of finding ourselves bogged down in multiple committees and multiple red tape. The essential problem of planning is that it combines to a unique degree a wide variety of interests and complexity of experts with an absolute need for unified vision and unified control.

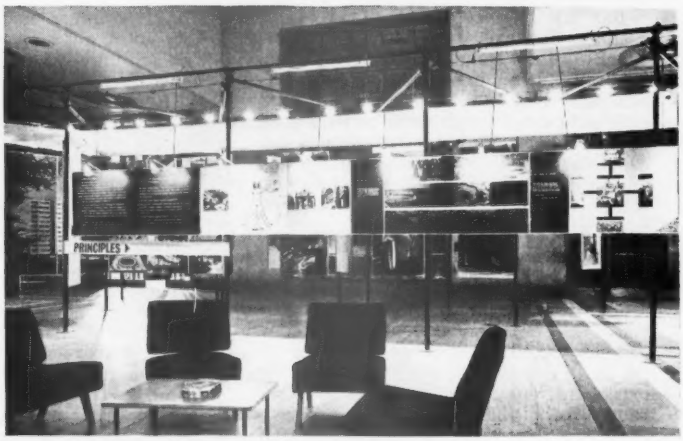
If any country can solve this problem, this country has the best chance of doing so, because we have always specialised in free discussion and the interchange of ideas leading to action.

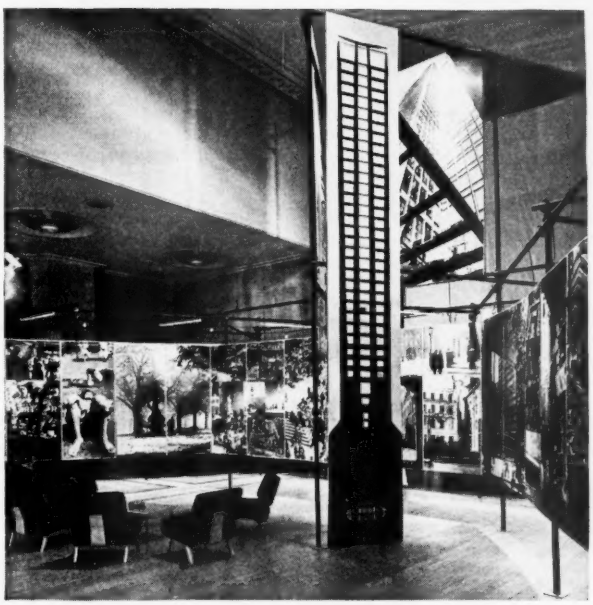
It is no use pretending that it is an easy one. At the local government level Mr. Max Lock spoke of the vital need to consult public opinion and carry it with us, and Mr. Chamberlin mentioned the Barbican Committee, without which he felt this great scheme would never have materialised. If in every local authority a reconstruction committee existed whose business it was to combine all interests and consider solely problems of urban renewal, there would be some hope of avoiding this appalling buck-passing which is the great danger of local government. Such a committee, not necessarily consisting of councillors alone, advised by a planner of real imagination and powers of leadership, might mean that just as we solved our problems of leadership, control and action during the war, so we would solve them in peace time.

As Mr. Edmonds said in his splendid piece of pseudo-Greek: 'by thinking in terms of human beings, they added to the sum of their greatness'.









An exhibition prepared by the Society for the Promotion of Urban Renewal (S.P.U.R.) was on view at the R.I.B.A. during the 'Living Town' symposium. The exhibition was organised by a group of architects, planners and sociologists under the chairmanship of the Hon. Lionel Brett and was designed by Mr. Christof Bon. It was sponsored by the Housing Centre supported by the R.I.B.A., the Civic Trust and the T.P.I.

S.P.U.R. advocates:

(*a*) New Towns within cities. From conurbations down to the villages there is land going waste that could take people and business from the congested centres and save further inroads on the countryside.

(*b*) A national urban renewal research organisation.

(*c*) Reconstruction committees in every city and town, to promote comprehensive development and to investigate the physical and economic aspects of renewal in each area.

(*d*) Inter-professional planning teams in all large urban areas.

(*e*) A small number of Government-sponsored Urban Renewal Pilot Projects to demonstrate the investment value of comprehensive development.

(*f*) Multi-level circulation to double our elbow-room and solve the traffic problem once and for all.

Early Industrial Architecture

by Bryan H. Harvey

Given at the R.I.B.A. on 7 April. The Hon. Lionel Brett, Vice-President, in the Chair

IN SO FAR AS we put roofs over our heads and dwell in towns we are consumers of architecture. In writing this paper I make no claim to closer connection with the art and technique of architecture than other consumers. Like them I can only judge by results. But causes can sometimes be deduced from results with greater discernment by the layman than by the expert and I shall try in this short review of my subject to point to what I believe are some of the causes which influenced the design of early industrial buildings and the layout of large areas of our great manufacturing towns.

But first let me say something of the opinions or if you prefer it the prejudices which I hold about architecture. I will state them at the outset without equivocation and here they are. I believe that architecture is a compromise between plan and elevation. A poor plan affronts and exhausts the body, a poor elevation affronts and exhausts the spirit. Good architecture is that which serves the utilitarian needs of living with beauty, grace and charm.

The graceful and beautiful is determined by the eye and over the years has hardly changed at all. Beauty in architecture results from the antiposition of mass and void; light shadow and outline; colour and texture. It is not beautiful in so far as it makes an emotional appeal or tells a story any more than the problem paintings of the 19th century achieve artistic merit because of their appeal to our curiosity. A building which therefore tells us that it is built of steel and concrete or that its roof is supported by means of a clever engineering trick in the form of flying buttresses is making an appeal to our emotions and not our eyes and should to that extent be as suspect as a romantic poem.

Most of the factors which make for beauty in architecture were discovered by the Greeks and Romans so that by the end of the Roman period there had penetrated to every part of the western world an architecture based upon certain well tried principles of geometry deriving not only its form and outline from such geometry, but ornament as well. It was self assured and restrained in conception and detail, a true classic architecture, classic in the fundamental sense that poetry, drama, painting, sculpture may be said to be classic: above all, it was classic because it obeyed self-imposed rules in the way that a sonnet does.

This great classic tradition of architecture was broken by the coming of Gothic. Self-conscious, romantic, pursuing technical progress at the expense of form, it spread all over Europe with its restless need for change and progressed from style to style till finally supplanted by the rediscovery of true classic building of the Renaissance.

We admire the great Gothic cathedrals not because they are done well but because, like Johnson's dog standing on its hind legs, they are done at all. For their elevations, no longer determined by obeying the rules of proportion, witness only to new technical ways of exploiting stone and glass as building materials. Its ornament is no longer derived from the geometry of the building but from the need to tell a story.

Once again at the Renaissance, architecture, literature, drama and painting returned to classic simplicity. In England there emerged a native classical style which found its ultimate expression in the simpler domestic structures.

Coinciding with a vastly increasing commercial prosperity it spread to every sphere of design and created a unity which permeated everything from jelly moulds to palaces. Merchant adventurers and religious dissidents carried it overseas particularly to America where translated into a new medium, wood, it achieved a new delicacy and charm and where it still flourishes in simple wooden homes of this day. The translation from stone to wood without change of tradition has lessons for us today if only to pose the question 'do new materials need a new idiom?'

Eighteenth-century England was rational, graceful and elegant. It was also brutal, disease ridden and corrupt. Artistically, however, it had few conflicts, and it was into this society that a new civilisation was born. Based on technology it differed both in form and substance from all its predecessors. For whereas previous civilisations had offered high cultural benefits for the few, often confined to limited spheres of geography, race or religion, the new age from the first, despite the early horrors and conflicts, was dedicated to the needs of the many.

The monuments of previous civilisations are to be seen in palaces, churches and public buildings. The monuments of early industrialisation are everywhere about us. The old cotton mills of Lancashire, the viaducts and stations of our railways, the tunnels and aqueducts of our canals, the pumping engines of Cornwall. Alas, many have already disappeared, much of what is left is doomed.

The earliest cotton and silk mills were water driven and are to be found all over Cheshire and Derbyshire where water could be exploited. So far as I can discover they were built by local craftsmen, sometimes part builder, sometimes part engineer. In structure they approached in size and complexity only the larger country houses in the area and it is clear that these great private palaces were used as inspiration by the builders of the early Mills. Two fine examples (Lyme Park at Disley and Chatsworth) were almost certainly well known to the builders of many of the early Mills in Cheshire and Derbyshire. The difference of function between the great country houses and the early cotton Mills combined with the great similarity of their external appearance indicates in the strongest possible way their common architectural ancestry. The classic tradition was soon firmly established—after all there was no other—and was followed sedulously in mill design for over a hundred

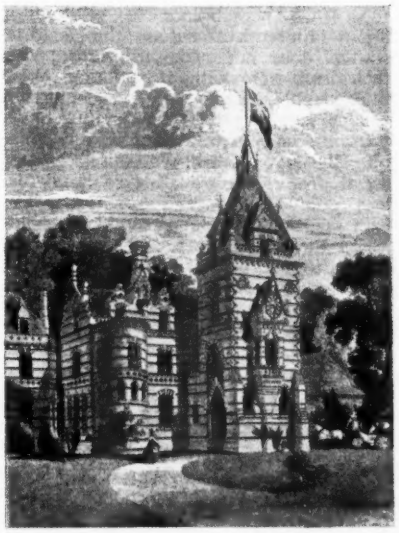
Lyme Park, West Front, by Leoni

Photo: National Buildings Record

years. Some of the details are admittedly crude but the inspiration is indisputable.

Classical detail was to be found everywhere in these early mills. Many of the early Lancashire mills had square windows surmounted by stone lintels. As time went on segmental arches replaced the stone lintels. Round top windows of striking beauty were sometimes used. Mills built as late as 1885 still utilised classical motifs both in design and decoration. Small pane glazing bars continued to be used even though large pane windows were widespread in the construction of dwelling houses. While it is possible that cost may have been an influence in this matter the strength of the classical tradition amongst engineers was very strong.

What Sherlock Holmes would have called the curious absence of the Gothic factory is worth consideration. For while these classic mills and small cottages were being built there were countless churches, chapels, town halls, private houses built contemporaneously in Victorian Gothic.



Mansion for Lord Calthorpe, 1860
Architect: S. Teulon

What had happened seems obvious. Classicism had become identified with function and was now no longer acceptable to the owning class—by function I do not mean in the context of Mr. J. M. Richards but the function of spinning cotton. It died on the altar of middle class sensibility. Factories were ugly to Victorians because of their associations not because of their form and the middle class seized upon the romantic revivals of Gothic or anything else as a means of escape from the industrial environment now wholly conceived in a simplified, and to them, despised Georgian.

For there now emerged a rift in building design. Architects designed the public buildings, engineers and near engineers designed the factories, and the latter were largely craftsmen whose only design tradition was the classic tradition of craftsmanship everywhere to be found in the towns in which they lived and the furniture and domestic utensils which they possessed. From this resulted country houses and town halls in revived Gothic and enormous beam engines supported on cast iron fluted columns of pure Greek Doric. Nineteenth-century industrial architecture, despite the cogency of the arguments recently put forward, was not carrying on a functional tradition but a classic tradition. Indeed it was its complete identification with the use it served that made it unacceptable anywhere else except to some extent as the architecture of the poor. For the rows and rows of artisans' cottages were still wholly conceived in the idiom of the 18th century at a time when mill owners' houses, parish churches and Oxford colleges were being given the full treatment of the 'Early English' or other Gothic styles. No tradition could survive in these conditions. Industry was a dirty word and the architecture that clothed it was even dirtier.

It is worth remembering that whatever its antecedents, in the event the Industrial Revolution, like other so-called revolutions, sprang from and was sustained by the ordinary people. From the first, however bad the conditions and however harsh and foreign the discipline of the mills, it is almost certain that they offered a continuity of employment and a level of earnings never before approached by the domestic system. Labour was attracted to the mills from far and wide and from the outset the factory system seems to have held out a vision of opportunity for the ordinary people which they had never known before. The dramatic fall in the death rate and the growing aspirations of the ordinary folk towards education and political influence is in striking contrast with the condition of the masses in an earlier age.

Though one or two of the aristocracy interested themselves in the dramatic changes of the period, notably the Duke of Bridgewater, the engineers and inventors sprang from the people. Arkwright was a barber, Watt an instrument maker, Brindley had little formal education, Stephenson was a farmer and then a collier. The engineers were craftsmen turned engineer. Masons, joiners, and others who, with native wit and inherited craftsmanship, turned their energies to the solution of the new problems. The manufacturers themselves were drawn from the ranks of the ordinary workers and though in after years by the accretion of great wealth they built up an industrial upper class, their origin was proletarian.

While in the past men and women of humble birth had by intelligence made their way into the ranks of the highest society, this movement from poverty to riches had never been more than a trickle. With the coming of the factories it became a broad expanding river. For the first time almost in human history, courage, brains and determination alone could secure for any man an almost unlimited improvement in his standard of material comfort.

It seems probable that the leaders of this new society, conservative in their ideas, relied upon the classical traditions which they had always known, and applied them in detail to the new machines and the new factories. When, as time went on, they achieved wealth and influence, they became susceptible to and may well have influenced the artistic fashions of the class which they wished to enter. A house or a church or a civic building became increasingly desirable the less that it resembled the factories, cottages and small dwellings that characterised the mill owner's origin. Similarly, the classical mill became a symbol of industry and was kept thus so as to be as little like the owner's house as possible.

However interesting it may be to speculate on the reasons for the survival of classical form among the industrial buildings, the reason for its adoption by the early engineers is obvious—there was no choice. The experiments in the 'Gothick Taste' could hardly be called a 'style'. The early canal builders decorated their tunnel mouths with simple classical detail wholly in keeping with the simple arch upon which it was based. In aqueducts, too, the same features persist, many of them executed with a surprising delicacy of touch.

The engineering works of the canals were from the first prodigious; several tunnels exceed two miles in length, the locks, aqueducts and bridges are countless. Measured in terms of simple triumph over nature, they deserve a place in history, yet throughout their length all the works exhibit a sureness of touch in design that is a joy to behold. The small bridges in out of the way places, the locks, sluices, docks are all of a pattern, simple yet exhibiting the same countrybred elegance of the chairs, tables and pottery of the period.

Compared with the canals, the railways were even more monumental in the engineering works which they involved. Viaducts to bridge valleys and rivers are to be found throughout the length and breadth of the land. The largely self-taught engineers who designed them matched the grandeur of their surroundings by the grandeur of their engineering works. Brunel's viaduct at Saltash, Stephenson's at Stockport, exhibit an elegance in strength that has hardly been matched before or since. There is no doubt that much of the English countryside has been enriched by these engineering works expressed in a classical style so appealing to the eye yet so structurally sound in an age that had yet to roll its first steel beam, that they have survived intact to carry, 100 years later, loads multiplied many times at speeds which must be four or five times as high. Where Vanbrugh had to dig an artificial lake so that he could delight the eye of his patron, Stephenson and Brunel had their opportunities ready made. How magnificently they seized them is patent for us all still to see. Other engineering works and buildings exhibited the same classical simplicity—tunnel mouths, warehouses, offices. But in the south of England, at least, railways had ceased by the middle of the 19th century to be a stronghold of classical design. Revived Tudor at first, and later a much more self-conscious 'Early English' found increasing foothold, possibly because

railway travel had now become respectable. Factories, as such, never achieved polite acceptance and so avoided the application of cultivated architectural 'styles'.

The application of steam power to cotton spinning previously described as characteristic of the new age led at once to its companion characteristic, the industrial town. Once industry was freed of its dependence on water power it could concentrate in the region most convenient either for fuel or transport or raw materials. In these changed conditions the northern cotton towns grew rapidly, and soon became a symbol for ugliness which no amount of research can erase. Yet individually the buildings, whether mills or workers' cottages, are not unpleasing, and are set in a countryside of outstanding if somewhat sombre natural beauty. One or two of them and parts of all of them exhibit a simple charm, which, if the buildings were not smoke begrimed, are reminiscent of the earlier textile towns of the Cotswolds. One cause, however, of their unsympathetic appearance in these days lies in the dirt which has now blackened all the stone and much of the brick, and the ever-growing crust of advertisements that intrude upon the eyes from almost every flat surface available.

But the cause of their ugliness lies deeper. It is almost certainly to be sought in the lack of any semblance of planning either deliberate or fortuitous during the course of their development. Land was bought, a mill built, a row of cottages followed and production began. This pattern was repeated a hundred times over. The mills were the centre of tiny communities which had no true allegiance to the town or village over which they sprawled, the connecting link was a small piece of neglected or ravaged countryside. A few of these isolated communities persist: most have been submerged into wider agglomerations which were never towns in the way that the older cities and boroughs had so become. In some cases quite artificial centres have been imposed upon these fortuitous growths of population. In many parts of the West Riding of Yorkshire, in Lancashire and in the Black Country, there are towns without boundaries. Each begins before another has ended and whole areas have become overbuilt without open space or natural relief.

A result of this haphazard and feverish erection of buildings is that identical seven-storeyed mills and rows of two-storeyed cottages are cast into intimate juxtaposition with no thought of overall design or unity. Many areas consist of an irregular pattern of narrow low streets interposed with high multi-storeyed buildings, so that one can see only broken outlines of each, and the eye can appreciate neither. Lines of small cottages, often pleasing in themselves, crawl haphazardly up hillsides and the horizon is everywhere broken by incongruities that offend the eye.

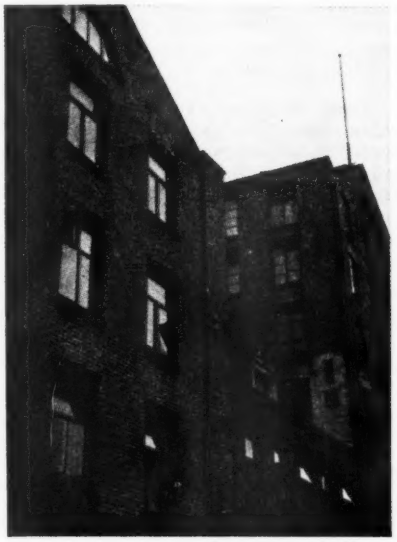
Lancashire and Yorkshire were not without champions of planning, though most schemes foundered on the rocks of public indifference or private acquisitiveness. In Ashton-under-Lyne parts of the Stamford Estate were laid out to an ordered pattern, though this part today is hardly discernable. But the real opportunities were lost almost at once. The ordinary people had freed themselves of the incubus of aristocratic privilege as exemplified by the great estates and their ordered villages of tied cottages. In so doing they had disastrously cut themselves off from the only restraining influence which could preserve the countryside or plan the new towns with some sort of beauty. If Oldham, geographically not unlike Bath, had been arranged with the same genius for elegant disorder, without altering a single brick of any of its mills, warehouses or dwellings, it would be by now almost certainly a national heritage.

When Blake coined the phrase 'dark Satanic Mills' he provided, albeit unwittingly, a stick with which the cotton industry has been beaten for a century or more. It was perhaps a misfortune for the Industrial Revolution and particularly for the new cotton manufactories that their early growth should have taken place at a time of rapidly awakening social conscience. The sufferings of the pauper apprentices are well known to our own generation, largely because they were of sufficient interest to contemporary observers to be recorded. The absence of information about apprentices before the factories started does not necessarily mean that their lives were without suffering. What little is known from one trade—chimney sweeps—suggests that the apprentice under the domestic system was appreciably worse off. The new industry certainly created social problems on a scale so large that they could no longer be ignored, and with a rapidity which completely outpaced the rudimentary machinery which existed to deal with them. But despite the appalling living conditions in the towns, the overcrowding, the dusty unhealthy atmosphere of some of the mills, the lack of sanitation, water supply, burial grounds or open spaces, there appears to have been a notable and continual decrease in the death rate, a more responsible and receptive outlook for the mass of the people, widespread aspirations toward

R.: Entrance to Rochdale Canal, Manchester, 1820

Below centre: Warehouse, Manchester, 1820

Below R.: Manchester Cotton Mills, 1830–40



education, economic and social amelioration and in the final event political power.

The revolt against the machine civilisation which emerged in the later 19th century, which was so actively stimulated by William Morris and his group, strengthened the belief that factories, as such, were fundamentally bad. Blake's mystical revolt against the early industries, the rumbling discontent of landowners and farmers at the encroachments of the railways and the sprawling towns, were thus welded together into a body of belief which held that industry was of necessity ugly and that it should be kept confined to a sort of ever-growing national backyard, north of the Trent.

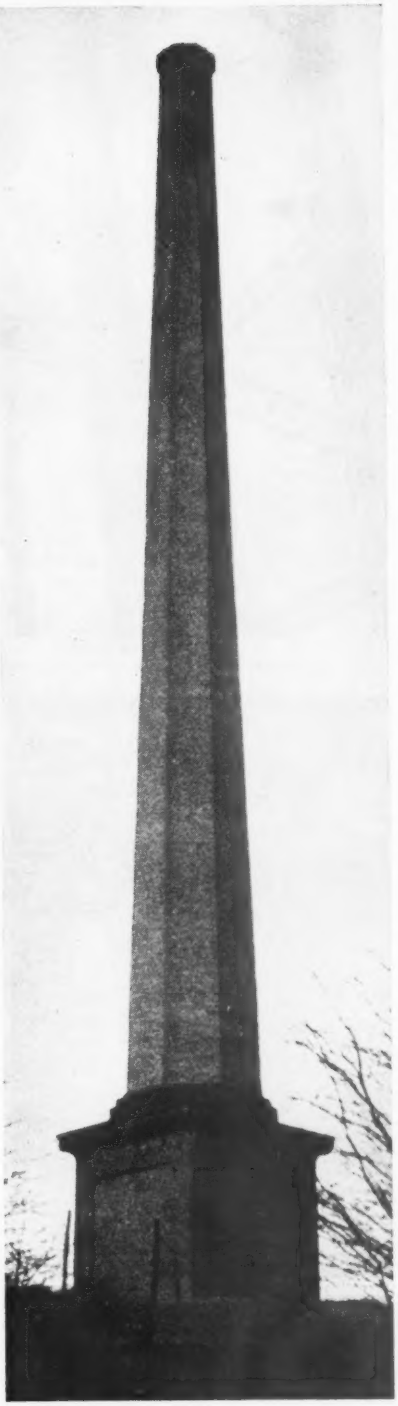
It is almost certain that the early mills were not at first thought of as ugly, dark or satanic. Indeed the new factories must have been a delight to the eye when they were first built. The soft red hand-made bricks and simple lines were relieved by brown stone mouldings in cornices, pediments and arches. The setting was often one of green fields and trees, the whole enterprise enjoying a unity of design and execution which was ingrained in owners, designers and craftsmen.

Even with a century of grime and two generations of bill-posting, some of the buildings today stand out with simple beauty amid their much more modern, but much less well contrived surroundings. It is hard to see how they could ever have been either dark or satanic.

The squalor of the new manufacturing towns was certainly real but should be judged in relation to the period as a whole. They almost certainly compared favourably with Hogarth's London.

We know that much contemporary housing was poorly built and badly sited. The rapid demand allowed many people to make fortunes out of the erection of working class dwellings (it has been done since, too), drainage was bad, streets were unpaved, sanitation was primitive to the point of non-existence—these factors made conditions in the towns unpleasant in the extreme. On the other hand, to ascribe to these conditions high mortality, cholera and typhoid epidemics, is to write industrial history as if no advance had been made in medical science since 1840. Mass disease is not caused by bad smells, unpleasant though they may be. The epidemics which ravaged so many of the towns in the 19th century were the result of infected water supplies. Once filtered clean water was supplied to the towns, they disappeared.

The wholesale condemnation of the working class housing of the early towns by late historians may not be wholly supported by the facts. The ugliness of the towns is continually stressed, yet many of the dwellings were charming in their conception and reasonably reliable in their construction. After all, many thousands of them have survived for more than a century; compared with the dwellings of a previous age they were often palaces. It is pointless to say they lacked proper sanitary facilities—so did the mansions. Cholera struck not only the new towns but London as well. It was not confined to those who lived in working class dwellings.



Mill chimney, Stockport
Designed by Wm. Fairbairn, 1834

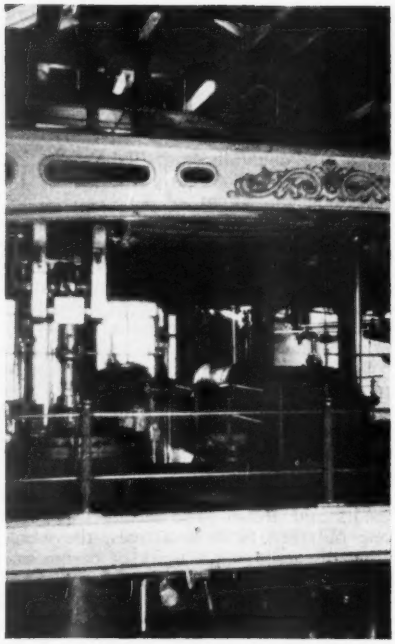
In mill design the early country house model had, by the turn of the 18th century, been considerably simplified to speed production and cut down cost, the central feature was retained though almost in vestigial form and was in most cases confined to a break in the front elevation of about 18 in. or so.

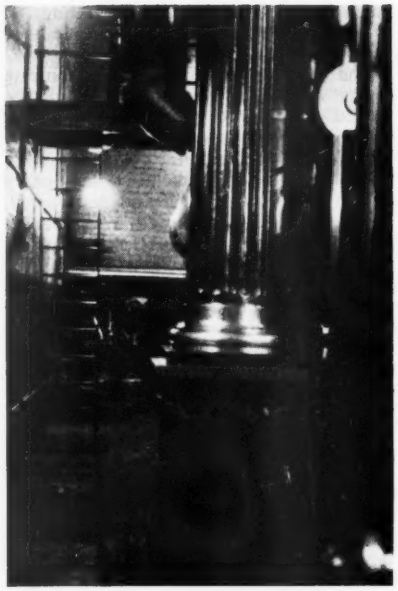
The very earliest mills were comparatively narrow in relation to their length. The floors were supported on wooden beams internally supported by a single line or, at the most, two lines of cast iron pillars. The heights of the ceilings generally decreased with each floor. Actual construction was affected to a considerable extent by two changes; one, the demand for fireproof buildings, and the second, the introduction of the mule spinning machine.

In the narrow early mills when mules were installed they were set longitudinally down the building, an arrangement often wasteful of space and unsuited for large scale installations. The later mills became very much more square in plan, with the mules set transversely across the structure. The elevation generally retained its good proportions and some of these mills, built as late as 1880, still show a remarkable elegance of design. Possibly because of the nature of the process the cardroom which normally occupies the ground floor was generally given a higher ceiling than the other rooms so as to minimise the unpleasantness of the dust. This floor was normally set over a three-quarter basement and was therefore approached up a short flight of steps to the main entrance. The basement was generally lit by three-quarter segmental windows. The total effect resulted in an elevation markedly well proportioned. Whereas the earliest mills had gable ends, the later ones had narrow hipped roofs, often with four or five ridges behind parapets.

Though well into the 19th century many mills were built with wooden supported floors, already before 1800 experiments had been made with floors supported on cast iron fish-backed beams with brick arches between. This, the so-called fireproof mill, became almost universal. The method of construction is straight forward; both supporting columns and joists were cast to standard dimensions and in later years something approaching unit construction resulted. Vast quantities of bricks were consumed in these enterprises and many of the early mills were sited near to supplies of clay, the first operation in the erection of the mill being to make and fire the bricks. The clay in most of Lancashire and Cheshire makes a soft-red-brown brick of pleasing colour, and these hand-made bricks have given to the 19th century mills and factories a pleasant exterior surface. Bricks from some of these old mills are now in demand as facing bricks for new houses. With the turn of the 20th century, Accrington bricks of a far brighter colour and with an impervious surface were almost exclusively used in industrial buildings. The effect is by no means so pleasing.

The basic classical traditions of the early civil engineers were followed by their successors. Telford and Brindley passed on their designs to the Stephensons, the Brunels and the others, to be developed and





Top L.: Cottages at Oldham, 1850

Centre L.: Cotton mill at Oldham, 1851

Bottom L.: Engine house, 1862

Top Centre: Gasholder at Hailsworth, 1870

Top R.: Beam engine, 1875–95

Above: Details of beam engine

The illustrations of industrial buildings are reproduced from photographs by the author selected from the slides he showed during his lecture, which also included a number of photographs taken by Mr. Eric de Maré, among them this month's cover picture (Stanley Mills, 1813). This has already appeared in *The Functional Tradition in Early Industrial Buildings*, by J. M. Richards, and is reproduced by courtesy of the Architectural Press.

L.: Moss Lane Spinning Co., Manchester, 1880

R.: Chimney stack with circular staircase, Manchester, 1880

multiplied. All of them were men of outstanding personality who dominated the English scene with their ability and determination. Their scope was nearly unlimited and they have left their monuments in their completed works. Their engineering architecture, so well founded in the classicism of the pioneers, remained true to its traditions right on till the dawn of the 20th century. Its influence in other spheres was considerable.

While the railways by their very universality alone are a dominant feature in the Industrial Revolution, the cotton industry around Manchester has a special place in this picture. From the outset it largely set the form of subsequent industrial development, and from the first the size of its enterprises was prodigious. Some of the earliest mills employed 600 or 700 workers, and the buildings that housed them were multi-storeyed structures that dwarfed their surroundings. Building a cotton mill soon became a matter of power and equipment, the structure taking second place in the calculations. The cost of erecting a mill was given in terms of cost per spindle, a form of estimation that has survived to this day. As far as one can see mill construction was in the hands of the engineers, rather than of architects in the true sense of the word.

An existing example of an early mill is the Kingston Mill, Stockport. This was erected to the designs of William (afterwards Sir William) Fairbairn, an engineer who had a long and active career in Manchester and was responsible either directly or indirectly for the designs of many cotton mills. Fairbairn, like other engineers of the time, was of humble origin, but achieved by his own efforts an outstanding position in many branches of engineering. He was associated with Stephenson both with the Conway and Britannia Tubular Bridges and in later years was a founder member of the Manchester Steam Users Association, a body set up to stem the appalling loss of life from boiler explosions in the industrial centres. His mills are unusually fine buildings of their kind and show Fairbairn to have been outstanding in many respects. The cotton industry preserved this tradition unbroken almost up to the close of the century. Lancashire still retains many of these older mills, now often adapted to other uses, many of them simple well proportioned buildings well suited to their purpose, unobtrusive to the eye; one or two of them achieving real elegance and architectural merit.

One architectural feature belongs to the Industrial Revolution alone and has become almost its trademark—the tall mill chimney. Fairbairn developed an octagonal type on a square plinth and with a very narrow moulding at the top. The one at Kingston Mill is particularly striking, but there are many others in Lancashire so similar that they are obviously either of his design or inspired by him. Chimneys being of outstanding importance developed both technically, in answer to the demand for better draught, and architecturally when they became conscious features of mill design and were occasionally combined with a circular staircase. The circular access staircase was a common feature of early mills: several were combined with water towers.

The importance of steam in this period can hardly be exaggerated. It was the only source of home-made power. It gave independence of location and very nearly unlimited resources. Wherever there was room to erect an engine and a way to transport fuel there could be a source of mechanical energy. The monumental character of the chimney stack seems to have been appreciated from the first. Several, as the one described above, separated from the boilers they served, stood alone in solitary dignity often with striking effect. In hilly country such as the borders of the Pennines, good draught could only be achieved by placing the chimney some distance up the hillside, while the mill or factory remained in the valley. Often long runs of underground flues were involved. The monumental effect was, however, often much enhanced by this arrangement.

The dominance of steam was not confined to the boilers and flues, but in the setting up of the engine itself. Only a few of the great engines designed on Watt's principle of the beam still remain at work. They are monuments to the period in themselves, and were set in engine houses of suitable proportions and proper dignity. As previously noted the engine bearings were supported on fluted columns and the engine houses were generally built in the most orthodox classical style. I find it difficult to believe that the tradition behind this is a functional one. An almost universal feature of these beam engine houses was the large window normally occupying the whole end wall of the engine house. It revealed to the onlooker virtually all of the working parts of the engine. Even in the earliest mills where the engine was housed in the main structure, its presence is always revealed by the tall stately windows set in the mill wall. The big windows so suited to the tall square beam engines were, however, continued as an architectural feature of many later engine houses designed to house horizontal engines, a type which in layout is the exact opposite of the beam engine. The power of tradition was considerable.

Many of the earliest structures of the Industrial Revolution have been pulled down to make way for newer buildings. But much still remains. Our great industrial cities are still full of buildings which, if they lack some of the refinements of the great Georgian period, are still inescapably classical in origin. Many of them were built up to the eighties and nineties of the last century and represent the last traces of a real architectural tradition in this country. Not all the mean streets and backyards are ugly in themselves. Many of the little houses, however far short they fall of modern standards in amenities, are at least impeccable in terms of proportion. A comparison between private enterprise housing of 1830–1850 and 1930–1950, reflects little credit on our own times.

The Industrial Revolution was a revolution led by engineers and chemists. Its characteristic, the marriage of science to

everyday life. Its leaders were humble in origin and mostly craftsmen by calling. The immense traditions of English craftsmanship and accepted design in the 18th century were so deeply rooted that they survived to influence industry for a hundred years. Early machines differed in no essential of design from furniture of the same period. The same features of design continued in the realm of machinery for many years. Arkwright's water twist frame was made in wood by a carpenter with the same feeling for the material as is to be found in the simple country furniture of the period.

With the coming of the 20th century factories lost their special identity and took on the same outward appearance as other buildings, were influenced by the same artistic fashions, but in a cheaper more amorphous application. Thus died a tradition. A tradition not of function despite the arguments which can be adduced for this view, but a classic tradition which architecture has shared from time to time with music, literature, and its fellow visual arts. An architecture dedicated to serve the eye of its beholders by a rigid adherence to self-made rules of proportion, an architecture characterised by a self-assured restraint and above all by the complete absence of competitive styles. It has been supplanted, as was Romanesque in the Middle Ages, by a romantic rival, restless, emotional, introspective, and dedicated to serve not the eye of its beholders but the hopes, fears, doubts and emotional distress of its creators.

VOTE OF THANKS

Mr. Nigel Hannen, B.A., F.I.O.B. (Director, Holland and Hannen and Cubitts, Ltd.): Mr. Harvey said that he claims no closer connection with the art and technique of architecture than other consumers. I would doubt that. Certainly he has a close knowledge of early industrial architecture.

Looking through the records of my firm, I find very few references to industrial buildings in the early stages from 1815 onwards. There were some warehouses at St. Katherine's Docks, a brewery or two and, of course, some railway stations. But whether I am qualified to talk on the subject or not, I find myself very much in agreement with Mr. Harvey in what he has been saying. If, as might be implied, it is a case of the blind leading the blind, perhaps we shall give an opportunity to critics, whether contemporary architects, Anti-Ugly Society or Sir Albert Richardson.

I do feel that we should from time to time review our beliefs and face up to any unpalatable facts that may appear from them. Mr. Harvey has shown that the early industrial buildings were not designed by the architectural profession but were the work of building firms who were thought quite capable of meeting the problems which arose. From the earliest times craftsmen have been jealous of the mysteries of their trade. Forges and foundries grew from the techniques they employed, and wind and water mills were age-old.

Many of our industries had work carried out by women in the household, and the woman's place was in the home; so no special industrial buildings were required. The great barns and storehouses were the inspiration of master craftsmen brought up in the tradition of the past who were fully capable of meeting the engineering problems involved.

When the industrialisation of the country started on a big scale, there seemed to be no reason to alter this procedure, and the buildings were of a simple nature. The builders were engineers by training or practical experience. Builders who had land to develop did not consider it necessary or perhaps desirable to employ an architect. It is certainly recorded that Thomas Cubitt in his development schemes had little use for outside architects. That arose from an unfortunate experience he had on his first contract, the London Institute, where the foundations proved to be quite inadequate for the building and he was continually held up for want of drawings.

I would point out, however, that he did in his office employ and train such successful architects afterwards as Lewis Cubitt, his younger brother, Edward Walters, and John Young.

But it was lack of co-ordinated town planning that was the major objection to the northern industrial towns, as Mr. Harvey has pointed out, and not the simplicity of design of the factories and mills, or perhaps the terraced houses attached to them, although we find some little difficulty, perhaps, in assimilating some of these rather dreary-looking streets.

Town planning was, as a matter of fact, a feature that was perhaps recognised at the time. For again, if I may refer to the Cubitts, they did devote quite a lot of their energies to the study and development of schemes with definite town planning attached to them. This showed that they were not entirely devoted to the development of mansions or schemes on a grand scale like Belgravia or Bloomsbury.

Ashton-under-Lyne has been mentioned, and there seems to be some connection here with the Cubitts, for on William's death a memorial service was held there in recognition of the work he had done and the assistance he had given to the town in a time of depression. It may be that he had some hand in the development and planning that has been referred to.

Mr. Harvey has explained the divergence between the industrial and domestic architecture and how it grew at that time, when simplicity was not altogether appreciated. I suspect the architects would have liked to liven up some of the elevations of the factory building if they had had a hand in it. But the layout of industrial buildings is in the first instance governed by the sequence of processes in an industry, and there were experts even in those days who saw to it that the processes fitted into these buildings. Mr. Harvey has mentioned that the uneconomic positioning of the mules was recognised and the layout of the mills was altered accordingly.

If we come down to the present-day factory, modern machines produce far greater problems. Their heaviness produces structural and engineering problems, and it needs perhaps specialists to deal with them. The early industrial buildings grew from 'engineering works expressed in a classical style, so appealing to the eye, yet so structurally sound'. I quote Mr. Harvey's words, because I think that it is the feature of his talk and the feature of these buildings.

A natural conclusion might be that the architect has little more to do than clad a building, and sometimes when we look at the modern factory, which is a tangle of tubes and ducts and pipes connecting transformers and tanks and pumps all left exposed to the elements, we wonder whether even this job is slipping away. But having said all this, I am a firm believer that the architect must be the right person to take charge and co-ordinate all these things. I have horrible visions of the factories of the thirties, with their pretty fronts on the roads and rows and rows of sheds or almost sheds in groups stretching away in the distance behind.

If the architect of today is to take charge, he must be fully equal to the task and must equip himself to do it. It is on this note that I would link the past with the future. Mr. Harvey's paper shows how things developed in the past and they may well run along the same lines in the future. As to whether it was a good development or a bad one, you may judge from the paper, but we are very grateful for it, and I have very much pleasure in proposing a vote of thanks to Mr. Harvey for his paper.

Mr. Donald H. McMorran, A.R.A., F.S.A. [*F*]: My job is to second the vote of thanks, so very skilfully proposed. I was concerned with the specification and the settlement of accounts in connection with the house which formed Mr. Harvey's last illustration, and so I knew him well enough to be confident that he would give you an interesting and amusing evening. I think that I lost sight of the fact that he was a pupil of J. E. Barton[1] of Bristol. I should have anticipated that we should hear something very erudite from him.

I came, in fact, to compliment a client and I find myself congratulating a brilliant new architectural theorist.

My impression is that he has given us a piece of original thinking and criticism in architecture which might have a deep effect on what we are thinking and doing today.

Have we not rather had a surfeit of woolly romanticism in architectural theory? Do not we rather desperately need a champion for the humanist tradition? We need a champion for that tradition, well informed, strong in argument and above all enthusiastic and visionary. It would not be surprising if such a champion were to prove not to be an architect. We are all much too near the job. Perhaps we have in a layman such as Mr. Harvey a potential

[1] J. E. Barton [*Hon. A*], former headmaster of Bristol Grammar School and author of *Purpose and Admiration* —a popular exposition of aesthetic principles—who died on 6 June 1959.

champion for that tradition. I beg, Sir, to second the vote of thanks.

DISCUSSION

Professor J. S. Allen [*F*]: There are one or two points I should like to raise.

First of all, Mr. Harvey inferred that the religious expression turned to the Gothic. This may have been true late in the century, but in the early days of the industrial town, from what I have seen, the tradition was constant. The builder who knew the Georgian window and brickwork applied his technique to the two-storey house, to the factory and to the church. In Accrington, where I prepared plans a few years ago, I took photographs myself, although they were not as good as Mr. Harvey's, because of the climatic conditions and my own lack of skill. But I have one photograph of a street showing on one side two-storey terrace housing, directly opposite a two-storey mill identical with the houses except for the chimney. A little distance away in the town is a chapel of two storeys, different from the factory and the houses only in having a spire.

The other point I would make is that the town planning of the early 19th century was harmless so long as the town remained a small one. When it remained a small one, a child born in a terrace house could see the Lancashire or Yorkshire hills from the village street. It was only when that pattern was increased to the size of Manchester that it became a serious evil. I think if we criticise the 19th-century builders we must only do so on the ground that they shared with others a lack of foresight.

Mr. Eric de Maré [*A*]: As Mr. Richards does not seem to be here, I had better take up the challenge for him on the question of functionalism or classicism. To be tactful, I would say both Mr. Harvey and Mr. Richards are right, but Mr. Richards is rather more right than Mr. Harvey. Because what do you mean exactly, Mr. Harvey, by the classical tradition? I quite agree that these noble mills of the 19th century stemmed from the 18th-century classical mansion. All the same, they were extremely functional buildings, and it seems to me that the important question which we could go on discussing all night is this: Is classical architecture functional?

The first picture we saw—which I did not recognise myself—was of a very old building. But there it is—some upright columns and a roof—and it is still standing. The main feature, it seems to me, in these early mills is the Georgian window. There are rows and rows of Georgian windows which are not strictly speaking classical features at all but came into England in the 17th century from Holland—or so I believe. Is there anything in architecture that is more functional than this so-called Georgian sash window? It seems to be a better sort of window than was ever designed before from the purely functional aspect. Not that I think we ought to repeat it in some vast office blocks today, by any means. I think a window which probably measures up to it from the functional point of view is the Scandinavian pivot window. The only trouble is that it gives a vast area of glass with its glare.

I was extremely interested to hear Mr. Harvey's brilliant talk which taught me a lot and showed me a lot which I did not know.

Another aspect he brought out, which we could discuss not for one night but for a week, is the sociological aspect of these early mills. Although they are fine things to look at, many of them, I would say that the lives that were lived inside them for the individual workers must have been absolute hell. This was really not for the simple reason that they were particularly dark and satanic, but because the chap inside had to do one job. That is the trouble with industrialism: that it produces the division of labour in which the individual does not create one thing all by himself. I hope myself that in future factories will be underground and run entirely by machines so that we do not any longer have to toil within and can devote ourselves to producing beautiful architecture.

But to come back to the Georgian and classical tradition, obviously there were features in these functional buildings which were purely decorative, such as the Doric caps to the iron columns and the doorway features and so on, which were really quite a small part of the whole design. The main things were the walls, the floors and the holes in the walls to let in the light.

Mr. H. J. Spiwak [*A*]: I came here with a lot of anticipation and was not disappointed. It was an extremely pleasurable way of assessing the period and seeing its gems, and one ought to be grateful to Mr. Harvey.

Nevertheless, I ask your indulgence to do some shooting which he himself has invited.

If Mr. Harvey had confined himself to a praise of the period and an assessment of what is positive in it, nobody could disagree with him. But he had to shoot at shadows and to condemn other styles and periods, just because they escaped his understanding. The bias which we often show in this way may be due to differences in our psychological make-up; yet more often than not it is due to being caught and fascinated by words, a mere unsubstantiated nomenclature.

For instance, he stresses the classical aspect of the period and then shows us a little pump house which is as romantic as anything in the world. Many of his buildings dripped with the romanticism he loathes. Similarly, Le Corbusier, in his early days of a rationalist-classical bias, thundered against Gothic architecture; yet his latest buildings are the acme of romanticism.

Incidentally, as a cure to one's own bias: in spite of my own enthusiasm for the Early Industrial, my feelings about the Orde factory in Stockport were rather mixed; it struck me, in fact, as a horror.

If someone decides for himself to approach architecture with a one-sided rationalist-humanist bias, he must not deny his more normally balanced fellow beings the right of sensing and feeling a building, because such an approach is more natural and significant to humans.

Finally, he ought to be very careful where he treads when it comes to Gothic architecture. This is not only a question of rational assessment being inadequate, but spiritual values come here to the fore, and more lies behind it than superficial aesthetics. In this context it is not of utmost relevance whether a window in a cathedral is this big or that.

What does quibbling about styles and names matter, anyhow? Why be so serious about trends and fashions which do not deserve the seriousness of treatment. 'Functional' and 'non-functional' are at core empty words, and unless one penetrates to what really matters in architecture, one may as well freely enjoy classic and romantic, Gothic and Baroque periods, with Owner's Folly and Betjeman Victorian thrown in.

Mr. R. J. M. Sutherland, A.M.I.C.E.: I like these early industrial buildings very much indeed, and I like their classical details. But I think the classical details are about as superficial as the trimmings of the carriages of early motor-cars. They were natural at the time when the buildings were built, because it was the normal way of building them. These buildings are the buildings of the load-bearing wall period, because at the time the round arch or the straight lintel was the cheapest way of doing it, and only when fairly recently the load-bearing wall went out as a general thing did the classical detail, a vestigial classical detail, go out.

I feel that a different set of slides might have slanted this very much more towards the functional side than towards the classical side.

Mr. George Whitby, M.B.E. [*F*]: I think I agree with almost everything the author said, but the main question which I believe it raises is this: what was it that weaned us (by us I mean the rich industrialists and those who build chapels) from these classical and humanist values?

Mr. Harvey gave a narrow view of architecture in the 19th century. If he had broadened his illustrations he would have found the chapels and mansions in the first 30 years were very similar to the mills. But it was from about 1830 onwards that things went wrong. Why did they go wrong? One must look historically at that.

This Institute was founded, I believe, as the Institute of British Architects in 1829 and became the Royal Institute in 1833. I wonder if there is a reason there. About the same time, the first architectural periodical in the world was founded. Did either of these two influences lead the world astray or lead Britain astray?

With those questions I will leave you, except to thank our lucky stars that this paper was given within these four walls. It would have been a dreadful thing if it had been a meeting of structural engineers

or even a joint meeting with structural engineers. It might have been even worse if it had been at the Institute of Builders!

The Chairman: I shall enjoy very much listening to Mr. Harvey dealing with the points raised.

Mr. Harvey: It is true *the chapels* were built in the classical style. The churches were for the bosses and the bosses had to have it right. It was the chapels that retained Georgian, because the chapel was part of the working-class environment. The church was part of the establishment and was built in Gothic, and I think I would challenge Professor Allen to find a *church* built classical after 1840.

Mr. Richard H. Sheppard [*F*]: What about the Ecclesiastical Commissioners' churches?

Mr. Harvey: In that case I shall have put my dates back a few years.

In reply to Mr. de Maré, Chatsworth was designed as a palace and I imagine it could not have been better for that purpose. As to the Georgian windows, I agree entirely. The Georgian cotton mill kept the heat in during the winter and the sun out during the summer. In some of the more modern mills the first thing you have to do is find some curtains to keep the sun out in the summer or you will have a strike on your hands if you don't. Mr. de Maré made some comments about what went on in the early factories. I must say I think the Industrial Revolution was the best thing that ever happened for the ordinary man. Why we know so much about the misery of the Industrial Revolution is because it happened at a period when people's consciences were awakening. It was worth while knowing how apprentices were being treated. Previously no one cared twopence. Oliver Twist slept with the corpses. However badly treated the cotton apprentices were they had companionship in misery. The little chimney sweep who was entirely at his master's mercy was driven up chimneys at the age of five, and, if he got stuck and you could not get him out you lit a fire under him because that would drive him out. Chimney sweeps died of cancer as early as 17. They slept with the soot. Any cotton mill was better than that. The only apprentices we know much about under the domestic system are the chimney sweeps, and I suggest to you that the plight of the others was as bad if not worse. I would not have liked at six or seven to sleep among the corpses in an undertaker's workshop, and I do not believe you would, either.

Mr. de Maré: I was not arguing about that.

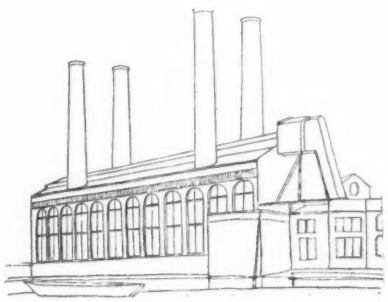
Mr. Harvey: Mr. Spiwak mentioned the 'romantic' pump house. May I respectfully suggest that it is only the setting that is romantic? As to Kingston Mill being a horror, I think it is my photograph that is the horror! He mentioned the question of the spiritual in Gothic architecture. I don't appreciate it myself. Have you ever seen anything like it—all these ribs exposed to show they could do it? Why not put a decent plaster ceiling to cover it?

As to the difference in purpose between cathedrals and factories, let me tell you a story about Gloucester Cathedral. As far as I understand it relied on the tomb of Edward II and the pilgrims who came in at the south door and went out at the north door to see it. They went round the back of the altar and out the other way. I have been told that one of the conditions of rebuilding Gloucester from a Norman to a Perpendicular abbey was that the flow of pilgrims must not stop, because the money would stop. That is not very spiritual to me, though very necessary, for it is like the present day. The process must go on, and the process was pilgrims. I understand also that the people who built Gloucester wanted an east window of a certain size which they found too big for the building. And this has happened recently, too, in many buildings. They therefore bowed the end out to get the window in.

I believe the masons who carved caricatures of their foremen on the bosses were like masons of today. Gothic introduced a new engineering feature, the pointed arch and stone roof. Gothic builders set out to build a building with a stone roof supported on glass walls, and we are trying to do the same today.

As to buildings being functional, Mr. Sutherland said that they were not Georgian at all but functional, and what he liked was not the details but the shape. The details were excrescences. Of course, ornament is always an excrescence. If you put paint on a building it is an excrescence. You do not have to put it on: you do it to improve the look of the building. You stick on a moulding to improve the look. You want to satisfy the eye.

I started by defining architecture and as I am not an architect I can say what I like. I said 'Beauty in architecture results from the antiposition of mass and void; light shadow and outline; colour and texture'. It seems to me that these are quite fundamental essentials. If you say a building looks right, you merely say I am right. A great deal of modern building which is so-called functional does not look right, and even the people who build these buildings cannot think they look right.



Practice Notes

Edited by Charles Woodward [*A*]

IN PARLIAMENT. House of Lords. Admiralty Buildings at Sheerness. Lord Conesford: My Lords, I beg to ask the Question which stands in my name on the Order Paper.

[The Question was as follows:

To ask Her Majesty's Government whether they recognise the architectural distinction and value of the buildings at Sheerness which the Admiralty is giving up; and what steps they are taking to secure that these buildings are preserved or properly cared for, when they are no longer in Government possession.]

The First Lord of the Admiralty (The Earl of Selkirk): My Lords, the Government are aware that a number of the buildings at Sheerness completed during the first quarter of the last century are of architectural interest. Seventeen residences and eight other buildings, including the quadrangle, the old Admiralty House and the dockyard church, have therefore been listed under Section 30 of the Town and Country Planning Act, 1947, as buildings of special architectural and historical interest. This requires that two months' notice be given before any alteration seriously affecting the character of the buildings. The local planning authority or the Minister of Housing and Local Government can then make a preservation order under Section 29 of the Act, if it is considered expedient to do so. (14 May 1959).

NATIONAL JOINT COUNCIL FOR THE BUILDING INDUSTRY. Spray Painting. Extra Payments. An amendment to National Working Rule 3A has been adopted by the Council to the effect that painters when employed in applying paint by the use of paint-spraying machines are to be paid 2*d.* per hour extra.

This decision takes effect from 1 June 1959, and supercedes all existing regional variation amendments relating to the use of paint-spraying machines.

ARCHITECTS REGISTRATION COUNCIL OF THE UNITED KINGDOM. The Annual Report for 1958–59 has now been published by the Council.

The Report refers to the Architects' Benevolent Society and states that less than 10 per cent of architects on the Register are recorded as subscribers to the funds of the Society. Donations and annual subscriptions are urgently needed and the Council hope that every architect on receipt of the Report will send a contribution to the Architects' Benevolent Society, 66 Portland Place, London, W.1.

The Council, having agreed that in the interests of the profession it is of the utmost importance to bring the Code of Professional Conduct to the early notice of new entrants, will shortly be seeking the approval of the Privy Council to embody in the

official forms of application for registration the following, or a similar, declaration:

'I hereby declare that I have read the Code of Professional Conduct and undertake that, if admitted to the Register, I will conform with the Principles laid down in the said Code now or hereafter by the Council, in the conduct of my practice as an architect, so long as my name remains on the Register.'

The Council has approved the addition of the following Principle to the Code: 'An architect must not enter into partnership, in the practice of architecture, with any person who is disqualified for registration by reason of the fact that his name has been removed from the Register under section 7 of the Architects (Registration) Act, 1931.' This new Principle will come into operation on 1 January 1960, and does not and will not affect partnerships existing before that date.

MINISTRY OF EDUCATION. The Standards for School Premises Regulations, 1959. These Regulations came into operation on 27 May and apply to school premises maintained by local education authorities. They apply to primary schools, secondary schools, nursery schools and nursery classes and special schools. Regulations for boarding accommodation are also included.

Circular 3/59 dated 26 May gives detailed information relating to the Regulations, and Circular 4/59 dated 26 May deals with the limits of cost for school building projects and, subject to paragraph 16 of this Circular, the Regulations supersede those made in April 1954. The Regulations are obtainable at H.M.S.O. price 9*d.* net., Circular 3/59 price 4*d.* net and Circular 4/59 price 6*d.* net.

MINISTRY OF HOUSING AND LOCAL GOVERNMENT. Use of Home-grown Timber. Circular 32/59, dated 14 May, states that increasing supplies of home-grown timber are coming on to the market. Local authorities are invited by the Minister to bear in mind that these supplies are available and to do all that they reasonably can to encourage the use of such timber suitable in size and quality to meet their requirements.

Report for 1958. The Ministry's Report for 1958 has been published and is obtainable at H.M.S.O. price 10*s.* 6*d.* net.

LAW CASE

L. S. Harris and Co. *v.* Hammond. Supervision to be paid for by percentage on 'value of contract'. Court of Appeal, 30 April 1959. Following a fire at the defendant's premises the plaintiffs were engaged by the defendant in writing to supervise the reinstatement of his premises, after damage by fire, 'at the agreed fee of 6 per cent on value of contract'.

In the County Court the plaintiffs were awarded £40 10*s.* for professional services in connection with their supervision, as surveyors, of the reinstatement of the fire-damaged premises. The reconstruction work was carried out by direct labour by various firms and individuals.

The defendant appealed from the judgment in the County Court on the ground that there was no evidence that the plaintiffs had performed any of the work referred to in the agreement in writing to supervise 'at the agreed fee of 6 per cent on value of contract'.

The Court of Appeal, in allowing the defendant's appeal, held that the words in the agreement between the parties meant the plaintiffs were to supervise the reinstatement of the property by an independent contractor. It could not mean that they were going to supervise the defendant doing the work himself. There was nothing in the agreement to compel the defendant to reinstate the premises at all, or, if he did, to reinstate them in such a manner as to attract the 6 per cent fee. It could not be said that the defendant, by resorting to direct labour, was committing a breach of his contract. Accordingly, the contract as it stood could not entitle the plaintiffs to any remuneration, and the appeal would be allowed with costs. (THE ESTATES GAZETTE, 16 May 1959.)

Correspondence

ARCHITECTURAL EDUCATION

Dear Sir,—Your May JOURNAL notices contained a statement drawing members' attention to the requirements for probationership and a strong recommendation not to employ juniors or pupils who did not possess them.

In the same issue was a letter from a member regarding the Board of Architectural Education's decision to raise these minimum requirements in the near future.

The doubts expressed in this letter are shared by the writer who wonders if the profession as a whole have realised the underlying implication of the Board's action.

Now that all entrants to the profession, not merely those going to full-time schools, have to pass G.C.E. at Advanced Level, what must inevitably result?

In spite of all the Board's and full-time schools' efforts the profession relies to a very great extent for staffing, particularly in the less responsible positions, on men trained in offices and part-time and evening schools; men who have been unable to afford full-time training, and so equally are unlikely to be able to stay on at their grammar or secondary schools until they can take Advanced Level G.C.E.

These men are, in the writer's view, an absolute necessity to the economic well-being of the profession as a whole and their training and the establishment of a recognised qualification other than Associateship (although this should not be denied those who can reach the standard) are matters which should be clarified before the requirement of Advanced Level G.C.E. is brought into force.

After all there is nothing to prevent the full-time schools making such a requirement necessary for their own entrants if they wish unilaterally, without it applying to the boy who has to train externally.

Yours faithfully,

C. G. PERCY [*A*]

PRESENTATION OF PLANNING APPLICATIONS TO LOCAL AUTHORITIES

Dear Sir,—The question put by Mr. William Home at the 121st Annual General Meeting was a pertinent one. It received, as the President remarked, a not very satisfactory answer.

This matter of the restriction of the making of planning applications by all and sundry is a very important one to the public generally, but it is being 'fought' on too narrow a front and may never succeed for that reason.

The idea that Parliamentary legislation might be invoked to oblige planning authorities to reject plans that are not submitted by a qualified architect is wishful thinking. In any case, it would be most undesirable, as architects are obviously not the only people qualified to prepare and submit plans; in fact there are not a few who, though unqualified in the sense now given to the word 'architect', can do it every bit as well and sometimes much better; but that is another matter!

It is the surveyors and planning officers to the local authorities and their staffs who have to suffer the added labour of deciphering and trying to straighten out the host of illiterate applications that pour onto their desks in an unending flood.

It is the planning committees aided by the advice of the officers and advisory panels who have the say as to whether an application is granted or refused, with the Minister having the last word in the event of dispute.

All these persons are at present aiding and abetting the principle that in building anyone is entitled to have a go with the result that the public generally are the sufferers.

Fortunately, in the case of the larger projects modern building techniques and the amount of theoretical calculation that goes with its construction puts the untrained out of court. The model bye-law clauses properly applied by the determined building inspector can give even the expert food for thought, but this does not, unfortunately, cover the aesthetic design field.

Here, again, the building that demands the services of the structural engineer has the services of an architect, so the sizeable job is not usually the problem.

It is more in the housing and small works field where the horrors are perpetrated. This is where the untrained, the speculator,

the illiterate, and the out-and-out charlatan have their fling and get away with it time and time again.

Surely it should not be too difficult to agree on a minimum standard of presentation which would necessitate an applicant engaging the services of, at the very least, a good draughtsman who, and this should be a must, would have to declare his identity and the capacity in which he was acting for the applicant.

This declaration of identity and responsibility is an important matter especially if the person responsible for the design is made to answer for it. This would go a long way towards stopping the students and the assistants and architects in practice who supply badly prepared 'plans only' to builders and others for submission in the name of the applicant or his builder.

Local authorities should be requested to refer all matters concerning the application to the person claiming to be the author of the design—for the applicant endeavouring to use 'back door' methods or to employ cheap labour in the preparation of plans this could prove most embarrassing!

I fully appreciate that these simple measures may not be nearly so attractive to some as the utopian state where only architects may submit planning applications.

It is suggested, however, that these measures are at least practical of agreement and application and could not fail but improve the present position, and one which the President so rightly referred to as not very satisfactory.

Yours faithfully,

M. R. FLETCHER [*L*]

(*M. Rainsford Fletcher and Partners*)

R.I.B.A. 'PLANNING' EVENINGS

Dear Sir,—I must beg a few lines of the space at your disposal to warn other members not to waste their time going to discussions at the R.I.B.A.[1] on Urban Renewal. Not, that is, if they have any inkling of what they are in for. I have just left one supposed to be about 'Communities and Neighbourhoods', fuming at a lost evening.

The chairman, in a lengthy introduction, explained that those 'on the platform' did not like the title, so preferred to put it in the form of a question, 'What do we know about it?' The first speaker, described as 'academic', virtually said 'Not as much as you think', and the second, sympathetically introduced as a practical and knowledgeable field worker, said, in effect, 'Not as much as we would like'.

It was dressed up as a scientific discussion but both speakers preferred not to define their terms and said so.

The speeches from the floor were consequently vague, baffled and baffling, except that of a lady who obviously belonged to either a community or a neighbourhood and began to give her version of what one is. She was not a planner or an architect or a sociologist, but was far from being an 'ordinary person', as she described herself. She would make a good chairwoman.

I went expecting enlightenment and felt deep sympathy with the student who tried to find a lesson from it all, and obviously failed.

There was a lot of talk about privacy at this meeting. One of the things one can do in private is to say things which would be irrelevant and a waste of other people's time to say in public. I think these speakers could have very well done that and thought of something more useful to say to an audience requiring a lead for a discussion.

Yours faithfully,

G. M. HOBBS [*A*]

[1] 27, 28, 29 May.

BUILDING SOCIETIES AND THE DESIGN OF HOUSES

Dear Sir,—In your May issue you very kindly published a letter of mine in which I drew attention to the fact that practically no architects served on the boards of directors of our building societies, and in consequence the design of houses and the security of the societies and investors suffered.

I suggested that those so interested should form a 'group' to deal with this very important matter.

As a result of this I have received a considerable number of letters in agreement.

May I now ask, in order to reduce correspondence, that those so interested do oblige by sending me lists of architect investors giving the names of the building societies concerned.

A meeting of the group will be called as soon as possible.

Yours faithfully,

SIDNEY LOWETH [*F*]

2 *Balfour Court, Folkestone, Kent.*

THE KALENDAR

Dear Sir,—I am an architect with two offices 30 miles apart, both of which have been in existence for over 25 years, and carry out an equal amount of my work.

The address of only one office is included in the Kalendar, and although the other office is of equal importance to me, the R.I.B.A. have refused on a number of occasions to allow the address of the second office to be published in the Kalendar—in spite of the fact that I am prepared to pay for any extra costs involved by printing both addresses.

I lose work in this way as people would come to me more readily if they knew I had an established office 30 miles nearer to them, who would not otherwise be interested.

It is very important to me that both my office addresses should appear in the Kalendar, and I am wondering if other architects in a similar position have been refused similar requests. I should like to have their comments.

Yours faithfully,

L. MAGNUS AUSTIN [*F*]

Book Reviews

Architecture U.S.A., by *Ian McCallum.* 11¼ in. 216 pp. incl. illus. Bibliog. Architectural Press. 1959. £3 3*s*.

If Ian McCallum is right—and I am sure he is—in his contention that the American Grand Tour is as vital to 20th-century architects as the Italian Grand Tour was to 17th-century practitioners, then one could not do better than recommend his book to intending travellers as essential preparatory reading.

For those who have neither time nor inclination to visit the U.S.A., but would dearly like to possess a concise guide to the many cross currents of American architecture, this book will bring into focus the variety and virility of the American scene. After a brief, well-written background to architecture across the United States, the author has chosen the biographical vehicle for his survey of buildings and their designs. Counting the Architects Collaborative as one, 33 biographies are brilliantly sketched in word, photograph and drawing, and Mr. McCallum is to be congratulated on the breadth and depth of the resultant picture.

The task must have been colossal (not many people in England realise what a vast place the United States is) and it is not surprising therefore that some of one's own personal 'musts' in such a book are omitted. Welton Becket, for instance, has had a profound influence for good in the commercial jungle of Los Angeles. His architecture is good, but even more important is his demonstration of the benefits to be derived from the all-in service. Karl Warnecke, too, is a regrettable omission—perhaps the best designer working in the Bay Area and more profoundly influencing his contemporaries in and around San Francisco than some of Mr. McCallum's subjects. I suppose the difficulty is to know where, or with whom, to stop.

The great limitation of the biographical approach is that the reader does not necessarily emerge with any clear idea of where American architecture as a whole is going or in what field it has achieved its greatest success. The increasingly high quality of suburban commercial architecture as the towns decentralise, for instance, or the tremendously important advances in the prefabrication of building components, or the almost complete disappearance in some areas of craft skills: these trends only come through, if you read carefully between the lines.

On the other hand, one sees most clearly the influence of personalities upon the face of a nation and upon the work of their disciples. My only real regret is that the book is not half as thick again.

N. KEITH SCOTT [*A*]

The Landscape of Power, by *Sylvia Crowe.* 8¾ in. 115 pp. incl. illus. Index. Architectural Press. 1958. 16*s*.

In her third book Miss Crowe has confined herself to the parts of Britain which are being affected by our increasing demands

for power. Her observations and suggestions should interest anyone concerned with the siting of nuclear power stations, hydro-electric stations, electric transmission lines and oil refineries.

Miss Crowe states that a thorough survey is vital to the success of a project. The scale of the landscape pattern and the mass of the building that could be absorbed into it should be related. However, the introduction of some well-sited structure, such as a radio transmitting mast, can be a positive improvement on the existing landscape—providing that the usual sprawl of accessories are well controlled.

The author has a thorough knowledge of the requirements of power stations and makes sound observations on the general outlines of the buildings and the use of materials. She also emphasises that a project should be constantly viewed in relationship to its surroundings at all stages in the design. The approach to the site and distant views should be considered. These and many other points are well supported by the illustrations, although some of the plans do not make their point readily apparent.

'Our generation', says Miss Crowe, and few would disagree with her, 'blames the industrialists of the 19th century bitterly for having destroyed so much of the landscape and left us a legacy of thousands of acres of ugly and derelict land, but this is nothing compared with the havoc we shall leave to our descendants unless we take avoiding action now and find a means of reconciling our need for power with our need for a landscape fit to live in.'

JEREMY LEVER [*Student*]

The Philips Pavilion at the 1958 Brussels World Fair. (Reprint from PHILIPS TECHNICAL REVIEW, vol. 20, Nos. 1–3, 1958–59.) 11¾ in. 50 pp. incl. illus. 5*s*.

Early in 1956 Philips approached Le Corbusier and asked him to design a pavilion for them at the Brussels World Fair. It had been decided that the pavilion would not contain a display of products but that it should be a 'manifestation which would represent this world concern in a dignified manner, but at the same time a manifestation that would be achieved by an interesting and striking combination of the newest inventions and products of the extensive Philips production programme'. Le Corbusier replied that he would make an 'electronic poem'.

For thirty years the modern movement has clamoured for a synthesis of the arts; no more than the awkward elbowing of different disciplines had resulted until Le Corbusier, Xenakis and the musician Varese, together with Philips and the engineering firm of Strabed created this experience for the Brussels Fair.

The poem was seen and heard by 500 people at a time, lasted for eight minutes, and two minutes was allowed for entry and exit. The spectators stood in the 'stomach' to see and to hear. Sound and light, in colours, images and music, were projected into the volume sometimes tracking over the bounding surfaces, other times saturating the enclosed space.

At the time of the Fair the PHILIPS TECHNICAL REVIEW published five articles describing the construction and working of the pavilion. In the first article Xenakis traces the sequence of his spatial design and illustrates it with a remarkable sequence of sketches which communicate the development of the conic and hypar surfaces. In the second, third and fourth the theory, testing and construction of the pavilion are examined. The fifth describes the light and sound effects together with the electronic equipment used. All the articles are well illustrated with diagrams and photographs.

Writing analytically, the techniques used were not new. The theory of saddle-shaped shells has not been advanced, the electronic gimmicks and the images are all familiar, even stereotyped to the specialist. But the fact that they were all brought together without the dominance of any, and the seemingly inevitable way in which they were brought together was new and provided a profound experience. One hopes that such enterprise was good publicity.

JOHN VOELCKER [*A*]

High Schools—Today and Tomorrow, by *Charles W. Bursch* and *John Lyon Reid.* 10½ in. 125 pp. incl. illus. Index. New York: Reinhold. £3 4*s*.

This is a book about education and its administration. The authors feel, and they are right, that secondary education is tied too rigidly to class periods and 'lessons'. Pupils also need guidance in individual programmes of private study and experiment, participation in small-group activities, projects and discussions.

Such programmes cannot be carried out in buildings containing traditional classroom blocks, however well designed for their original academic purpose. Even formalised school laboratories are designed chiefly for teacher demonstration: space is rarely available for project work by all the pupils.

The underlying educational principles are not new: they are as old-fashioned, and as sound, as Mrs. Parkhurst's 'Dalton Plan'. When the class system makes way for 'individualised pupil scheduling', the school life of the clever child is not frittered away in time marking, while his less gifted classmates struggle with fundamentals. Even more important is the moral advantage. Habits of self-reliance and independence are acquired. Self-education, with the teacher as 'consultant pupil counselor' is a better training for the future citizen of a democracy than a system in which the teacher is a salesman of predigested pills of information, sugared more or less efficiently according to his ability. There are, of course, the disadvantages of cost and the strain which the system places on both teachers and pupils. In the early Daltonised schools it was found necessary to re-introduce periods of class instruction to give pupils a rest from the hard labour of private study!

The book is most attractively illustrated by a sort of thesis design for a super-comprehensive for 1,200 pupils, 55 acres of 'building plant' consisting of linked and grouped work spaces in best anonymous modern. What Mr. Summerson calls 'that rich, exciting language whose vocabulary is always on the move and which since it has no grammar can never be ungrammatical . . . the natural architectural language of America'.

PETER M. BONE [*A*]

Estimating for Woodworkers and Country Builders. *Rural Industries Bureau Publication No.* 61. 8½ in. 68 pp. incl. illus. London [1957]. 5*s*. 6*d*.

The body of the work is devoted to builders' office organisations with the moral that accurate record-keeping is essential to good estimating.

A chapter deals with forms and methods of tendering; the craftsman is shown the advantages of tendering where quantities form part of the contract.

Since the standard method of measurement may not be readily intelligible to him, but he may be assumed capable of 'taking off' the materials from drawings and providing from his experience the cost of labour of simple units of joinery, he is shown how the cost of various such units can be worked out by methods of price analysis and then broken down to give the price per foot for pricing the bill of quantities. Repeated examples of price analysis are given in the Appendices in each case supported by the relevant extract from the bill.

The debatable question as to whether it would be economical for a small business with limited equipment to make a large number of pieces of joinery of similar size is raised and answered.

Finally an alternative method is given for pricing a complete structure.

This book has an attractive and distinctive cover and can be recommended to the craftsman to whom the Rural Industries Bureau addresses itself and indeed to any one, perhaps further afield, who is faced with similar problems.

CECIL J. SEARLE [*A*]

Churches, artists and people: 13th report of the *Central Council for the Care of Churches.* 8¼ in. 56 pp. incl. illus. + xvi pls. Church Information Board. 1959. 3*s*.

This attractive and up-to-date survey of church art in England contains timely illustrated articles on redundant churches, stained glass, and organ re-building, and others on the care of brasses, heating methods, and Christian expression in art. The foreword contains welcome news of the preservation of St. Katharine Cree (Laudian) and other city churches, and notice of the coming transference of the Council's offices from Fulham Palace to the converted All Hallows London Wall. There are reviews and lists of Diocesan Advisory Committees; incidentally their frequency of meeting is given, varying from monthly to quarterly, presumably from differences in the volume of work.

H. V. M. R.

The Modern Factory, by *Edward D. Mills.* 9½ in. 2nd ed. 216 pp. incl. illus. Bibliog. Index. Architectural Press. 1959. £1 16*s.*

Here is a genuinely revised edition of a book which was well received when it first appeared eight years ago. It is concerned with all aspects of factory layout, planning, design and construction, and includes information on new techniques and methods, as well as legislation affecting industrial building. All the plates are new.

The Design of Physics Research Laboratories. A Symposium held by the London and Home Counties Branch of the Institute of Physics. 9¾ in. 108 pp. incl. illus. Bibliog. Index. New York: Reinhold Publ. Corpn.; London: Chapman and Hall. 1959. £1 1*s.*

Many members will remember the successful symposium held at the Royal Institution in 1957, which was organised by the London and Home Counties Branch of the Institute of Physics. This little book contains the proceedings of this meeting, together with a very large number of illustrations, plans and diagrams, and much helpful bibliographical data. It should be invaluable.

Architecture of Bosnia and the Way Towards Modernity, by *D. Grabrijan* and *J. Neidhardt.* 9 × 9½ in. 506 pp. incl. illus. Bibliography. Index. Državna Založba Slovenije (Ciril Vidmar). 1957.

As a study of the growth of a town, the influencing factors and the material results, the early part of this book might in many ways serve as a model. Several types of building, mainly in the old, Oriental, Sarajevo, are analysed with accompanying photographs and vigorous, charming drawings in varying techniques of presentation.

The extent to which Bosnia, in the mountainous centre of Yugoslavia, forms an enclave of Oriental culture may come as a surprise. The majority of its people have hitherto been firmly rooted in Moslem traditions which continued in spite of intervening Austro-Hungarian rule. The present social revolution in Yugoslavia has already destroyed many of the old values, but it is encouraging to find the architects of the new régime turning with such sympathy to the examination of the past as a basis for their inspiration and patterns of community living.

Some of the ideological statements may fall strangely on Western ears, but there is an unmistakable and engaging enthusiasm for building a brave new world. Tito's crusading slogan for a better standard of living echoes in the background—'Industrialisation! Electrification!'

The main fault of this most interesting book is its tendency to be diffuse and repetitive. The bilingual format contributes towards this and the English text, though adequate, is by no means above reproach. A first section devoted to historical study and analysis contains a fine chapter by the late Prof. Grabrijan on 'The Oriental House in Sarajevo' and is followed by numerous schemes for future development. In spite of previous attention to the intimate human scale of the Oriental buildings, a few of the larger projects seem to lose themselves in over-serious monumentality. On the smaller scale and in some of the layouts and groupings, there is imaginative quality of a high order. ELAINE DENBY [*A*]

Norwegian Architecture Past and Present, by *Guthorm Kavli.* 10 in. 147 pp. incl. illus. + 32 pls. Bibliog. Index. Oslo: Dreyers; London: Batsford. 1959. £2 10*s.*

Printed and published in Norway, but also bearing the imprint of Messrs. B. T. Batsford, Guthorm Kavli's book covers a thousand years of characteristic Norwegian building, from the Viking ships, in which an extraordinary skill in timber construction was first developed, to the latest stereometric slab, as typical now of Oslo as of São Paulo—or nearly so. The volume is very fully illustrated with photographs, line drawings and plans. A bibliography is included and also a glossary.

Our Architectural Confusion, by *Louis LaBeaume.* 8¼ in. 128 pp. New York: Vantage Press. 1959. $3.00.

In a delightful group of essays, a Mid-Western architect comments upon things that have been happening to the tyrant art in the United States in recent, and not so recent, years. No angry young man, stammering incoherent protests, Mr. LaBeaume emerges as an urbane elderly gentleman, articulate, observant, humorous. He is engagingly prejudiced, too, and not always very convincing, perhaps, but the whole thing is most entertaining. A good bedside book for architects.

Aluminium in Building, by *E. I. Brimelow.* 8¾ in. 378 pp. incl. illus. Index. Macdonald. 1957. £2 2*s.*

The author, who is on the staff of the National Physical Laboratory at Teddington, summarises the scientific and economic history of aluminium as a building material, and then proceeds to a concise, and extremely informative, review of its many fields of application today, whether in the form of window-frames, roof covering, wall cladding, insulated panels, or all-aluminium structures of many kinds. A particularly valuable section discusses weathering characteristics, the prevention of corrosion, and protection and finish. Mr. Brimelow shows a refreshing appreciation of the architect's point of view, and Mr. Robert Matthew [*F*] contributes a foreword. J. C. P.

Lambeth Palace, by *C. R. Dodwell.* 11 in. 69 pp. incl. [24] pls. and pp. of illus. COUNTRY LIFE, 1958. £1 15*s.*

Since Dorothy Gardiner's historical *Story of Lambeth Palace* (1930), no general treatise seems to have appeared, and the post-war restorations and alterations have been justly deemed the right occasion for a re-appraisal, including architectural descriptions. The text, as far as it goes, is a readable summary of salient facts and has a human ring—so too, has the Archbishop's comparison, in his preface, between the 'gloomy and forbidding pile' of his first occupation and the present 'happy and cheerful place'. Among other things, the date of the chapel crypt (the oldest part) has been reassessed, on newly-found analogies, as between 1213 and 1225—within the earlier of two alternative periods, that is, suggested by the Royal Commission, that favoured by the reviewer. The serious defect of the book is that there are no plans—till recent years a great fault in COUNTRY LIFE productions. The plates showing the residential wing appear to have inaccurate captions: on pl. 57 both figures show what is evidently in fact the north side, not 'south', and on pl. 58, while 'front' (for the lower figure) means 'south front', the upper subject ('north') is difficult to identify. Is the author of the 1875 report William 'Burgess', or Burges (one 's')? The indexes are good; photographs are excellent and make one realise (e.g.) the varied brickwork textures of the Morton Gateway and the excellence, for its day, of Blore's residential part; but the large-type text (16-point) and thick paper make the size of the book deceiving, and as for the rose-pink jacket . . .!

Shropshire, by *Nikolaus Pevsner.* (The Buildings of England *series*, BE 16.) 7 in. 368 pp. incl. double-pl. map + 64 pls. and pp. of illus. Harmondsworth: Penguin Books. 1958. 8*s.* 6*d.*, paper ed.

During the progress of this series the subject-headings used for the captions have undergone change and amplification, and this is evident in those of the present volume. 'Timber-framed buildings' are naturally much in evidence; the ten or so examples illustrated form a miniature history of framing patterns and panel shapes, from the plain tall rectangles and straight interpenetrating braces of the 15th and early 16th centuries, through the herring-bone diagonal bracing and what Dr. Pevsner calls 'concave lozenges' (square panels with curved braces across the corners) of the late 16th, to the larger square panels of the early 17th century. The two most important towns, Shrewsbury and Ludlow, take up nearly a fifth of the body of the book; for the former the author has overcome the 'perambulation'-versus-'list' dilemma of the London volumes by adopting the 'list' form for the text and adding a summarised 'perambulation'—an excellent *via media.* The famous Ludlow Castle round chapel (dated *c.* 1140, one of the oldest of the five round churches), St. Mary, Shrewsbury, with its early stiff-leaf capitals, and Stokesay Castle all receive attention.

One sentence in the book will be echoed by many (it relates to Ludlow): 'The town . . . has now a narrow and a spacious part . . . both are needed in a town, and may Ludlow never decide to pull down its tortuous centre to please the gentleman motorist or the charabanc tourist. . . .' H. V. M. R.

Notes and Notices

NOTICES

Session 1958–59. Minutes X. At the Ninth General Meeting of the Session 1958–59 held on Tuesday 26 May 1959 at 6 p.m. Mr. Basil Spence, O.B.E., T.D., A.R.A., A.R.S.A., President, in the chair.

The Meeting was attended by about 550 members and guests.

The Minutes of the Annual General Meeting held on Tuesday 5 May 1959 were taken as read, confirmed and signed as correct.

The President spoke on the presentation of the Royal Gold Medal 1959 to Professor L. Mies van der Rohe [*H.C.M.—U.S.A.*], and called upon Professor Sir William Holford, M.A., P.P.T.P.I., F.I.L.A. [*F*], The Hon. Lionel Brett, M.A. (Vice-President), Professor J. M. Richards, C.B.E. [*A*], Mr. R. Llewelyn Davies, M.A. [*F*], and Mr. Peter H. G. Chamberlin [*F*], who also spoke.

The President then asked Professor Sir William Holford and The Hon. Lionel Brett to escort Professor Mies van der Rohe to the platform.

Having been invested with the Medal, Professor Mies van der Rohe expressed his thanks for the honour conferred upon him.

The proceedings closed at 6.50 p.m.

Session 1958–59. Minutes XI. At the Tenth General Meeting of the Session 1958–59 held on Tuesday 16 June 1959 at 6 p.m. Mr. Basil Spence, O.B.E., T.D., A.R.A., A.R.S.A., President, in the chair.

The Meeting was attended by about 250 members and guests.

The Minutes of the Ninth General Meeting held on Tuesday 26 May 1959 were taken as read, confirmed and signed as correct.

The following members attending for the first time since their election were formally admitted by the President: *as Fellow:* H. L. J. Ford; *as Associates:* J. R. Carver, S. A. Hamilton-Fletcher, J. P. Hartley, D. C. Heal, B. A. Hennessy, Miss J. C. Hodgson, G. W. Robins, Miss D. V. Russell, Miss S. M. Turtle, Gwyn Williams.

The Secretary having read the report of the Scrutineers on the result of the Annual Election for the Council, the President declared that the members of the Council and the Honorary Auditors for the Session 1959–60 were duly elected in accordance therewith. On the motion of the President, a vote of thanks was passed by acclamation to the Scrutineers for their labours, and was briefly responded to by Mr. E. H. Firmin [*F*], Chairman of the Scrutineers.

The President having given his illustrated talk of his visit to Africa entitled 'Spence on Safari', on the motion of Mr. Ove Arup, seconded by Mr. George Walford, Chairman of the Quantity Surveyors' Committee, Royal Institution of Chartered Surveyors, a vote of thanks was passed to the President by acclamation and was briefly responded to.

The proceedings closed at 7.13 p.m.

Cessation of Membership. Under the provisions of Bye-law 21 the following has ceased to be a member of the Royal Institute: *as Associate:* Mohammed Hashmat Raza.

Election Void. Under the provisions of Bye-law 17 the election as Associate of the following has been declared void:—Philip Gordon Hardy Rogers; David Smith Sturrock.

Associates and the Fellowship. Associates who are eligible and desirous of transferring to the Fellowship are reminded that as from 1 January 1956 all candidates for the Fellowship will be required to submit to the Fellowship Examiners drawings and photographs or examples of work. Candidates may also be required to attend for an interview, which may however be dispensed with at the discretion of the Fellowship Examiners. The necessary nomination forms may be obtained from the Secretary, R.I.B.A.

Licentiates and the Fellowship. By a resolution of the Council passed on 4 April 1938 all candidates whose work is approved are required to sit for the Examination, which is the design portion of the Special Final Examination, and no candidate will be exempted from the Examination.

Note.—The above resolution does not affect Licentiates of over 60 years of age applying under Section IV, Clause 4 (*c*) (ii), of the Supplemental Charter of 1925.

Correspondence with the Institute. In order to facilitate speedier attention to correspondence, and to relieve the staff of a great deal of research, it is particularly requested that members and Students will kindly state in all correspondence with the Institute the class of membership (*F, A, L* or *Student*) to which they belong.

COMPETITIONS

Civic Centre, Corby. The Urban District Council of Corby invite architects registered under the Architects (Registration) Acts and resident in Great Britain and Northern Ireland to submit designs in competition for a proposed Civic Centre, to include Municipal Offices, Council Chamber, etc., Public Assembly Halls and Swimming Bath to be erected on a site in the Town Centre of this New Town.

Assessor: Mr. Edward D. Mills, C.B.E. [*F*].

Premiums: £1,000, £750, £500.

Last day for submitting designs: noon, 21 December 1959.

Conditions may be obtained on application to the Clerk of the Council, Council Offices, Corby, Northants, Deposit: £2. An applicant for the conditions must state his registration number.

County Offices, Taunton. Somerset County Council invite architects registered under the Architects Registration Acts, and resident in Great Britain and Northern Ireland, to submit designs in competition for proposed new County Offices to be erected on a site in Taunton.

Assessors: The Hon. Lionel Brett [*F*], Mr. Geoffrey Jellicoe [*F*] and Mr. J. M. Richards [*A*].

Premiums: £1,500, £1,000, £500.

Last day for submitting designs: 5.30 p.m. on 15 February 1960.

Last day for questions: 22 September 1959.

Conditions may be obtained on application to the Clerk of the County Council, County Hall, Taunton, Somerset. Deposit: £2 2*s*. An applicant for the conditions must state his registration number.

Zinc Eaves Gutters. The Zinc Development Association invite architects, technical teachers, students, building trade operatives and others to submit in competition practical suggestions for improving the design and present methods of fixing and joining Eaves Gutters fabricated from zinc sheets.

Assessors: Gontran Goulden, T.D. [*F*], Arthur L. Watts, R. V. Cooper, E. J. Elmes, R. W. V. Smith.

Premiums: £75, £25.

Last day for submitting designs: Noon, 30 September 1959.

Conditions may be obtained from the Zinc Development Association, 34, Berkeley Square, W.1.

COMPETITION RESULTS

The National Gallery Site

1. (£2,500) Barrie Dewhurst [*A*] (Cambridge, Massachusetts).

2. (£1,000) Boissevain and Osmond (Paul Boissevain and Barbara Osmond [*A*]) (London).

3. (£500) I. H. Marshall and R. P. Marshall (Nairobi, Kenya).

£300 each: Mervyn Handley [*A*] (Wallington); William Crabtree [*F*] (London).

£50 each: Peter Carter [*A*]; John Bickerdike [*A*]; Peter North [*Student*]; Frank Bennett [*A*]; Westwood, Sons and Partners [*FF*]; Denis Clarke Hall [*F*] and H. S. Scorer [*A*] in association with Montgomerie and Oldfield [*AA*]; John H. Church [*A*] and Anthony P. Richardson [*A*]; William Ryder [*A*].

Churchill College, Cambridge

Winner: Richard Sheppard, Robson and Partners [*FF/AA*].

Other finalists: Howell, Killick and Partridge [*AAA*]; Chamberlin, Powell and Bon [*F/A*]; James Stirling and James Gowan [*AA*].

BOARD OF ARCHITECTURAL EDUCATION

R.I.B.A. Prizes and Studentships, 1959–1960. Copies of the R.I.B.A. Prizes and Studentships Pamphlet for 1959–1960 are now available. The pamphlet contains full information about the various Prizes and Studentships, together with, where applicable, the detailed programmes for the competitions. Copies are obtainable from the Secretary, R.I.B.A., price 3*s*. 6*d*., inclusive of postage.

The R.I.B.A. Intermediate Examination. May 1959. The R.I.B.A. Intermediate Examination was held in London, Plymouth, Manchester, Leeds, Newcastle upon Tyne, Edinburgh and Belfast from 8 to 14 May 1959.

Of the 410 candidates examined, 135 passed and 275 were relegated.

The successful candidates are as follows:—

Alexander: (Miss) Evelyn
Andain: R. M.
Anderson: D. A.
Attwood: P. C.
Barbour: D. K.
Bardsley: David
Barnard: C. L.
Barton: Christopher
Beardsmore: B. L.
Bell: R. R.
Blackburn: B. A.
Blunden: R. A.
Blunt: William
Board: Graham
Boardman: J. E.
Bowker: P. L.
Bradbury: D. W.
Bryan: J. C.
Bryant: A. G. E.
Burton: Alan
Campbell: A. T.
Chapman: D. J.
Charles: (Mrs.) Mary
Clarkson: M. G.
Coddington: (Miss) A. T.
Collier: B. R.
Collis: Gordon
Cornish: A. J.
Creber: R. G.
Cross: R. C.
Crothers: J. W.
Cutty: Jack
Davies: D. B.
Deeks: D. E.
Docker: B. J.
Draper: D. J.
Dray: R. J.
Drinkwater: Trevor
Dunham: G. J. N.
Edwards: D. J.
Edwards: P. B.
Egan: G. T. B. A.
Evershed: W. R.
Fannen: Anthony
Farnell: B. D.
Fell: J. D.

Ferguson: C. P.
Fleming: James
Fleming: R. W.
Freestone:(Miss)B. A.
Gall: J. B.
Golder: M. V.
Gray: J. D.
Green: A. M.
Hardy: Edward
Hayes: R. R.
Hayward: Clive
Healy: P. V.
Heard: R. M.
Hill: G. J.
Hobbs: Alan
Honey: D. J.
Hopton: R. G.
Horgan: B. P.
Jessop: G. T.
Jones: John
Jones: Peter
Jones: R. A.
Kinley: Ronald
Kohli: K. K.
Lee: Anthony
Lowes: Brian
Luscombe: Peter
McAlster: Peter
McDade: Mitchell
McKerchar: Colin
McManus: P. E.
MacVeigh: E. B.
McWalter: W. C.
Manwell: M. L.
Massey: J. H.
Maund: Alec
Miller: A. T.
Moorby: Myles
Naylor: J. D.
Noble: Anthony
Nolan: John
Orchard: M. M.
Parker: A. T.
Penn: F. J.
Perry: R. G.
Perry: (Miss) V. N.
Peters: D. C.
Pickles: I. J.
Pimlott: R. B.
Price: W. J. B.
Pritchard: M. J.
Quarrell: R. A.
Reeves: M. L.
Rewal: R. K.
Richmond: T. L.
Riley: M. J.
Roberts: Glyn
Rotherham: W. D. B.
Sandham: Roger
Sant: P. T.
Sayers: C. J.
Shelton: Barrie
Shreeve: R. M.
Simmons: C. S.
Sims: (Miss) V. K.
Smart: J. M. R.
Smith: A. H.
Smith: H. B.
Smith: K. J.
Stow: E. M.
Swan: R. E. J.
Tang: G. K.
Taylor: B. L.
Taylor: Geoffrey
Taylor: J. M.
Teh: (Miss) H. B.
Thomson: R. I.
Truscott: N. W.
Varnom: Jeffrey
Warns: (Mrs.) F. M.
Warren: I. W.
Watson: E. L.
Whalley: D. M.
Whitehead: Graham
Whittingham: P. M.
Williams: A. M.
Woodgate: J. A.
Yielder: Ronald
Young: C. M.

ALLIED SOCIETIES

Changes of Officers and Addresses

Bristol and Somerset Society of Architects. President, Kenneth Nealon, F.R.I.C.S. [*F*]. Hon. Secretary, R. T. Stride [*A*], 40 Park Street, Bristol, 1.

Devon and Cornwall Society of Architects. President, John Radford [*A*].

Hampshire and Isle of Wight Architectural Association. The President is still Mr. Frank R. Greenen, A.M.T.P.I. [*A*] (and not as shown in the June issue of the JOURNAL).

Leicestershire and Rutland Society of Architects. President, T. A. Collins [*F*].

Northern Architectural Association. President, Professor J. H. Napper [*F*]. Hon. Secretary, W. H. Williamson [*A*], 7 St. Mary's Place, Newcastle upon Tyne, 1. *Cumberland Branch.* Hon. Secretary, B. I. R. Bird [*A*]. His address is 49 Skiddaw Road, Carlisle (and not as given in the June JOURNAL).

Royal Incorporation of Architects in Scotland. President, J. A. H. Mottram [*A*].

Royal Society of Ulster Architects. Hon. Secretary, J. F. Munce [*A*], c/o Messrs. Munce and Kennedy, 133 University Street, Belfast.

Sheffield, South Yorkshire and District Society of Architects and Surveyors. President, W. L. Clunie [*F*].

Federation of Malaya Society of Architects. Annual Dinner. The Society held its tenth annual dinner on 18 April at the Federal Hotel, Kuala Lumpur. The President, Mr. T. A. L. Concannon [*F*], was in the chair and the dinner was attended by some 120 guests. The guests of honour were His Highness the Sultan of Selangor and the Tungku Ampuan, and other distinguished guests included His Highness the Raja Muda of Selangor and the Raja Puan Muda, the Chief Justice of the Federation of Malaya, Sir James Thompson and Lady Thompson, the Hon. Minister of Works, Posts and Telecommunications, Inche Sardon bin Haji Jubir, and Isteri, and the Mentri Besar of Selangor, Inche Abdul Jamil bin Abdul Rais, and Isteri.

The toast of His Majesty the Yang di-Pertuan Agong was proposed by Mr. Concannon and that of the Sultan of Selangor by Mr. W. I. Shipley [*A*]. The Minister of Works proposed the toast of the R.I.B.A. and the Federation of Malaya Society of Architects, to which Mr. Concannon replied. The toast of the Guests was proposed by Mr. Kington Loo [*A*], to which Sir James Thompson replied.

Royal Incorporation of Architects in Scotland, Annual Convention Dinner. At the annual convention dinner of the R.I.A.S. held on 29 May at the Golf View Hotel, Nairn, the President, Mr. James A. H. Mottram [*A*], was in the chair. The R.I.B.A. was represented by the President, Mr. Basil Spence, O.B.E., A.R.A., A.R.S.A., F.R.I.A.S., and Mrs. Spence, and the Secretary, Mr. C. D. Spragg, C.B.E. Among the guests were the Rt. Honourable James G. Stuart, P.C., M.V.O., M.C., M.P., and Brigadier J. E. Stirling, D.S.O., T.D., Her Majesty's Lieutenant for Nairnshire.

Mr. Mottram proposed the toast of the Founder and the Rt. Honourable James Stuart proposed the toast of the Architectural Profession, to which Mr. Spence and Mr. Mottram replied. Mr. Ian A. Munro, F.R.I.A.S. [*F*], President of the Inverness Architectural Association, proposed the toast of the Guests and Brigadier Stirling replied, and Mr. Hugh S. Macdonald, F.R.I.A.S. [*F*], Vice-President of the Inverness Architectural Association, proposed the toast of the Chairman.

Notes from the Minutes of the Council

MEETING HELD ON 16 JUNE 1959

Appointment of R.I.B.A. Representatives

(*a*) *Council of the British School at Rome.* D. H. Beaty-Pownall [*F*] (Chairman of the Board of Architectural Education) (re-appointed). The other representative is Edward D. Mills [*F*].

(*b*) *National House Builders' Registration Council.* Miss J. G. Ledeboer [*F*] (re-appointed). The other representatives are A. W. Kenyon [*F*], C. E. Culpin [*F*].

(*c*) *British Flower Industry Association: Brains Trust:* 21 *October* 1959. R.I.B.A. member, Mr. Peter Shepheard [*F*].

(*d*) *Rotherham Technical College Building Advisory Committee.* A. D. P. Jenkinson [*A*] (re-appointed).

(*e*) *Ipswich Civic College Council for Building.* Peter Barefoot [*A*] in place of Martin J. Slater [*F*].

(*f*) *Great Britain–U.S.S.R. Association.* A. W. Cleeve Barr [*A*].

(*g*) *B.S.I. Committees.* (i) *B*/34 *Damp Proof Courses.* Michael James [*A*]. H. Owen Luder [*A*]. (ii) *OEM*/1 *Office Desks, Tables and Seating* (*OEM*/2 *Filing and Storage*). B. C. Adams [*A*], Michael Keyte [*A*]. (iii) *Revision of C.P.*304 *Soil and Waste Pipes and C.P.*305 *Sanitary Appliances.* M. M. Clark [*F*].

Birthday Honours. The congratulations of the Council were sent to the members and others on whom Her Majesty the Queen had conferred honours.

The Honorary Corresponding Membership. Mr. John Noble Richards, President of the American Institute of Architects, and Señor Carlos Ramos, Director of the Higher School of Fine Arts, Oporto, have accepted the Council's nomination for election as Honorary Corresponding Members.

Amendment to Rules: Devon and Cornwall Society of Architects. Approval was given to a number of revisions to the Rules of the Devon and Cornwall Society of Architects.

Membership. The following members were elected: as Fellows 6; as Associates 49.

Students. 74 Probationers were elected as Students.

Applications for Election. Applications for election were approved as follows: *Election 6 October* 1959 (*Overseas Candidates*): as Fellows 4; as Associates 55.

Resignations. The following resignations were accepted with regret: Charles Neville Byrom [*A*], Mrs. Benvenuta Francesca Jeffryes [*A*], Mrs. Elizabeth Anne Maskill [*A*], Miss Mary Vivienne Morgan [*A*], Geoffrey Dorsett Owen [*A*], William Watt Pert [*A*], Mrs. Isoult de Valence Poole [*A*], William Eric Attenburrow Hurcomb [*L*], Wilfred Basil Messiter [*L*].

Applications for Transfer to Retired Members' Class under Bye-law 15. The following applications were approved: as Retired Fellow: Austen St. Barbe Harrison; as Retired Associates: Harold Thoresby Cooksey, Norman Charles Haigh; as Retired Licentiate: Philip Ernest Jackman.

Obituary. The Secretary reported with regret the death of the following members: Joseph Edwin Barton [*Hon. A*], John Batty [*F*], J. Cecil McDougall [*F*], Sir Alfred Ernest Shennan [*F*], James McLachlan [*Retd. F*], Paul Robin Frick [*A*], Thomas Stanley Hosking [*A*], Ronald Francis Orfeur [*A*], Mrs. Maud Amy Margaret White, M.B.E. [*A*], Cecil James Scott [*Retd. A*], Arthur Tedman [*Retd. A*], William Joseph Mate Thomasson [*Retd. A*], John Ambrose Bateman [*L*], Charles H. Spark [*L*], Albert James Varndell [*L*], Harry Webster [*L*], Charles Edmond Worthington [*L*], William Arthur Funnell [*Retd. L*], George Bain [*Student*], William Black Bain [*Student*], Frederick Charles James Cooper [*Student*], John Summerscales Darling [*Student*], Charles Richard Earnshaw [*Student*], William Francis Patrick Goshawk [*Student*], William Rushmore Shortreed [*Student*].

By resolution of the Council the sympathy and condolences of the Royal Institute have been conveyed to their relatives.

GENERAL NOTES

Truscon Travelling Scholarship. The selection committee, Mr. C. S. White [*F*], Mr. Gordon Graham [*A*], and Mr. Hugh Weeks, C.M.G., have awarded the 1959 Truscon Travelling Scholarship to Mr. Peter Whiteley, A.A.Dipl. [*A*], of London. Mr. Whiteley is in private practice; he also lectures at the Hammersmith College of Art and Building and writes for the architectural Press.

A similar scholarship has been awarded to Mr. D. F. Smith, B.E., an engineer in Truscon's Liverpool office.

Each scholarship is valued at £125 and will

enable the recipients to undertake a continental tour of about three weeks' duration. They will jointly study concrete work with particular reference to collaboration between architect and engineer.

Cost Control Conference, York, 9–11 October 1959. A further conference on methods of the control of building costs at the design stage is to be held at the Institute of Advanced Architectural Studies at York from Friday 9 October until Sunday 11 October 1959 under the sponsorship of the Cost Research Liaison Committee of the R.I.B.A. and R.I.C.S.

The conference will be on the same lines as the Cost Control Conferences held at Great Missenden and Bristol earlier this year, with many of the original speakers. The conference arrangements are being made jointly by the R.I.B.A. and the York Institute.

The R.I.C.S., the N.F.B.T.E. and R.I.B.A. Allied Societies within reach of York are being invited to send representatives and there will be places open to individuals.

The provisional programme is as follows:—

The building industry in relation to the national economy and world conditions, by Professor R. W. Revans, B.Sc., Ph.D. (Professor of Industrial Administration, Manchester University).

The architectural profession, by Miss J. M. N. Milne, M.A., F.I.S. (Economic Research Department, R.I.B.A.).

The role of the architect in cost planning, by Mr. G. Grenfell Baines, A.M.T.P.I. [*F*] (Architect in private practice).

The role of the quantity surveyor in cost planning, by Mr. J. Nisbet, A.R.I.C.S. (Chief Quantity Surveyor, War Office).

Alternative techniques of cost planning, by Mr. G. J. J. Hunt, B.Ec., A.R.A.I.A., A.M.B.I.M. [*A*] (Consultant with the Building Advisory Service).

The importance of communications in cost control, by Mr. A. C. Leyton, B.A., Ll.B., Barrister-at-Law (Organiser of Liberal Studies, Northampton College of Advanced Technology).

The effect of the design process upon tenders and building operations by Mr. I. Tomlin, F.I.B.E. (General Manager, Howard Farrow, Ltd., Building Division).

The architect's responsibility for programming and contract planning, by Mr. J. M. Austin-Smith, M.C., T.D., A.A. Dipl. [*F*] (Architect in private practice).

The conference is non-residential but the R.I.B.A. holds a number of provisional hotel bookings in York. Applicants are asked to write to Mr. Anthony Williams, Assistant Secretary, R.I.B.A., 66 Portland Place, W.1. Please state your age, professional or other qualifications, where you work and in what capacity and what, if any, experience you have in the application of cost control methods, and whether you wish the organisers to book hotel accommodation. Applications should be received by Monday 7 September.

The conference fee is estimated at £8 15*s*. (excluding breakfast and hotel accommodation).

Similar conferences are likely to be held in Manchester (2 to 4 January 1960) and Nottingham at Easter 1960. Details of these will be announced later.

The full set of papers presented at the Missenden conference are now available (price 25*s*.) from the Secretary R.I.B.A. They form a useful reference book on the subject of cost control at the design stage for anyone who is unable to attend the conferences.

Obituaries

Dr. Karo Semenovitch Alabian [*Honorary Corresponding Member, U.S.S.R.*] died in January 1959.

Dr. Alabian was born in 1897. In 1923 he attended the Moscow Arts and Technical Institute, from which he graduated in 1929 as an architect. In 1935 Dr. Alabian played an important part in the production of the Moscow reconstruction plan.

In 1932 he was a founder member of the Union of Soviet Architects and was for many years the Secretary-General of the Union. He was one of the rapporteurs at the Moscow Congress of the International Union of Architects in July 1958.

He was elected an Honorary Corresponding Member of the R.I.B.A. in 1936

Charles Montague Cecil Armstrong [*Retd. F*] died on 24 January 1959, aged 84.

Mr. A. H. Gardner [*F*], who was in partnership with Mr. Armstrong before the Second World War, writes:

'Charles Armstrong was articled in Winchester and later worked in the office of the late Colonel Sir R. W. Edis [*F*], then one of the leading architects of the day. He started private practice in 1900.

'His own work covered mainly country houses and estate cottages and he was for a time in partnership with Sidney R. Jones, better known as an artist. He was also a friend of F. L. Griggs, who prepared a number of perspectives for him. His principal early work was Bourton Hall near Rugby in collaboration with the late Harold Peto. In the gentlemanly manner of those days, no estimates were presented, the job being measured up and paid for on completion.

'He also designed or extended houses at Barford, Kenilworth, Frankton, Honington, Hill Wootton and Berkswell, and was responsible for an approved school at Kenilworth.

'In the 'twenties and 'thirties I was associated with him on the maternity, operating theatre and paying patients blocks at the Warneford Hospital, Leamington; in the remodelling of Tysoe and Paxford Manors; and the erection of Eastcliffe, Bembridge, Isle of Wight. He retired in 1940.

'In private his friendliness and humour were able to bridge the gap between the country-house life in which he was brought up and the more democratic setting of today.'

Leslie Barefoot, G.C. [*A*], died on 23 December 1958, aged 71.

Mr. Barefoot received his training at the A.A. School. After the First World War, during which he served in Palestine and was mentioned in dispatches, he joined the office of Mr. H. Munro Cautley [*A*] in Ipswich. In 1928 he was taken into partnership and after Mr. Cautley's retirement in 1956, Mr. Barefoot had continued the practice with his son Mr. Peter Barefoot [*A*] as Leslie and Peter Barefoot. His son is now continuing the practice.

During his partnership with Mr. Cautley, the firm was responsible for much work in Ipswich, including The Walk and The Thorofare shopping arcades; new hospital buildings for Ipswich and East Suffolk Hospital; extensions to Ipswich School; and the King George V Memorial Homes. As architects to Tollemache's Breweries Ltd. the firm designed the White Hart Hotel, Newmarket, and other hotels and public houses. Other work included Lloyds Bank, Sidney Street, Cambridge, and other branches in East Anglia, and numerous private houses and commercial premises also in East Anglia, and since 1946, housing for Felixstowe U.D.C., Aldeburgh and Southwold Borough Councils, and Hartismere R.D.C.

During the Second World War Mr. Barefoot was commissioned in the Royal Engineers and it was for his services as officer commanding a bomb disposal company that he was awarded the George Cross in 1941. He was demobilised with the rank of major.

He was a founder member and past President of the Suffolk Association of Architects, and had represented that body on the R.I.B.A. Council and the Allied Societies' Conference. He was especially interested in amateur dramatics and for many years ran his own company, the Leslie Barefoot Players, in Ipswich, and had produced plays for more than 25 years.

Robert Stanley Cobb, M.C. [*Retd. F*], died on 3 April 1959, aged 69.

His former partner, Mr. Howard D. Archer [*F*], writes:

'Robin Cobb, as he was always known, was educated at Dulwich College. The Argentine had attracted him before the First World War and he put in some years as an architectural assistant at Buenos Aires, following work in a London office and evening studies at the A.A. School, Tufton Street.

'He served throughout the war with the West Kent Regiment, seeing service in Gallipoli and in the Palestine Campaign. He was severely wounded and was awarded the Military Cross.

'Being anxious to break new ground Cobb decided after demobilisation to try Kenya and applied to the Colonial Office for an appointment as an architect, only to be told that there was no such appointment in Kenya. On being offered as an alternative a junior position in the Administration, he readily accepted and was posted to Kiambu in the Central Province of Kenya.

'Shortly after taking up the appointment he fell in with Mr. Hurle Bath [*A*], who had been practising on his own behalf in Nairobi since 1912. Mr. Bath was in great need of assistance, as the end of hostilities had brought a spate of work in the new Colony and he was vainly trying to do justice to a practice which demanded an office in Mombasa as well as Nairobi. Cobb had some difficulty in leaving Government service, but early in 1920 he joined Hurle Bath and took over the Mombasa work. Thus it was that he spent the first eight years of his time in Kenya at Mombasa.

'Following the retirement of Hurle Bath in 1926 he came to Nairobi in 1928, where he joined his other partner, Howard Archer.

'The Second World War, with all its difficulties of controls, almost brought architectural work to a standstill and the office was virtually closed in 1942, Cobb in the meantime having joined the Occupied Territories' Administration in Asmara, where he attained the rank of Major.

'The end of the war found him back in England, but he took the earliest possible opportunity to return with his family to Kenya in 1945. He then embarked with his partners, Howard Archer and Rodney Scammell [*F*], on a busy period of architectural work which included a number of the larger post-war buildings in East Africa. It was during the post-war period that he was chiefly responsible for reorganising the firm's branch offices in Mombasa, Kampala and Dar es Salaam, which had been closed during the war.

'Partly for reasons of health and partly to complete his children's education in England

he left the Colony in 1951 and went into retirement the following year.

'During most of his time in Kenya he had served as a member of the Council of the East Africa Institute of Architects and had held office twice as President.

'The last seven years of his life were spent in or near Oxford. He became a member of the Parish Council of Kidlington and was elected to the Urban District Council.

'At "Mill End", Kidlington, the Cobbs kept open house for visitors from East Africa, their home being literally crammed to capacity with people of all ages from overseas.

'Robin Cobb will be remembered with affection by a great number of friends in East Africa, not least by fellow members of his profession and by the building community.'

Major Basil Charlton Deacon [*Retd. F*] died on 24 November 1958, aged 80.

Major Deacon was articled to his father Mr. Charles E. Deacon [*F*] in Liverpool and started private practice in Luton in 1914 after winning an open competition for a design for Luton Public Library. He practised in Luton as partner in the firm of Franklin and Deacon until 1946 when he moved to Bedford. He was in partnership there with Mr. Charles E. Gude until 1949 and then went into partnership with Mr. A. R. Laing [*A*], who has continued the practice since Major Deacon's retirement in 1955.

His main works which were principally in Luton included electricity showrooms, a police station and courts, Territorial Army Headquarters and Laporte Factory, and also extensions to the Malvern Festival Theatre.

Major Deacon was a past member of the R.I.B.A. Council, a past President of the Northamptonshire, Bedfordshire and Huntingdonshire Association of Architects and a past Chairman of their Bedfordshire Branch, and had represented both bodies on the Allied Societies' Conference. He was a former member of Luton Town Council and also Dunstable Town Council.

Major Deacon had served in both World Wars in the Royal Engineers and between the wars commanded the Royal Engineer Field Company (T.A.) at Luton.

Frederick George Drewitt [*Retd. F*] died on 29 August 1958, aged 81.

Mr. Drewitt received his training in the office of Mr. Packer of Southport and subsequently joined the firm of Atkinson and Dallas in Shanghai. In 1911 he returned to England, setting up in practice in Penzance, Cornwall, in partnership with the late H. L. Cowell [*L*]. Later Mr. R. F. Wheatly [*F*] was taken into the partnership under the style of Cowell, Drewitt and Wheatly and today Mr. Drewitt's son, Mr. G. B. Drewitt [*F*], and Mr. K. E. Rundle [*L*] are continuing the practice under the same name. Mr. Drewitt retired from practice seven years ago.

Mr. Drewitt's work was within the county of Cornwall and included banks, schools, cinemas, public buildings and many houses, most of which were designed in the traditional manner and blended in with the Cornish countryside and showed the skill with which he handled the local materials and made his work easily recognisable. In his early days he designed many buildings for the Cornwall County Council, perhaps the best known being the Girls' County School at Truro which was won (with Mr. Cowell) in an open competition in 1920. He also won a competition for Lescudjack County Secondary Boys' School, Penzance. Other schools were the secondary school at Saltash, one at St. Erth, one at Nancledra and Mylor Bridge; and he redesigned the new buildings at Tehidy Sanatorium after it had been burned down about 36 years ago. This work for the County Council continued up to the time when the Council started their own Architects Department. Shortly before the Second World War he designed the Guildhall at St. Ives.

Among the many banks in Cornwall for which Mr. Drewitt was responsible were Barclays at Camborne, Helston and since the war, at Falmouth; Lloyds Bank at Newquay; and National Provincial Bank at Newquay. His best known work in West Cornwall was the alteration of the old Market House at Penzance, when the end was rebuilt for Lloyds Bank and the dome reconstructed and remodelled. Among the private houses designed by him were 'Baker's Folly' at Newquay and 'Foxstones' at Penberth.

Eric Craven Gregory [*Hon. A*] died on 10 February 1959, aged 71.

Mr. Gregory, who was Chairman of Percy Lund, Humphries and Co., Ltd., the Ganymed Press and the Design Research Unit, and a Director of the BURLINGTON MAGAZINE, was a generous benefactor of the arts in Britain. In 1950 he established the Gregory Fellowships at Leeds University in sculpture, poetry, painting and architecture, tenable for two years. He was made an Honorary LL.D. of Leeds University.

He was a Governor of the Chelsea Polytechnic, St. Martin's School of Art, and Bath Academy of Art, Corsham Court. He was also a member of the Standing Commission on Museums and Galleries since 1952, of the Committee of the Contemporary Art Society, of the art panel of the Arts Council of Great Britain, and Honorary Treasurer of the Institute of Contemporary Arts. He was elected an Honorary Associate in 1953.

James Grieve [*Retd. A*] died in July 1958, aged 78.

Mr. Grieve, who went to Merseyside as a young man from Scotland, was formerly Chief Architect of Liverpool Corporation Architectural and Housing Department. He played a major role in planning the development of the new town at Speke and delayed his retirement until he was 67 to deal with post-war housing problems.

He was a past member of the R.I.B.A. Salaried Members Committee.

David Strachan Haddon [*A*] died on 25 January 1959, aged 53.

Mr. J. S. Lewis, Registrar of the Institute of South African Architects, writes:

'Dave Haddon obtained the Diploma in Architecture of the University of the Witwatersrand in 1930. Even then his unusual determination asserted itself: he sought no exemption, but qualified for the Associateship of the R.I.B.A. by passing the whole of the R.I.B.A. Final.

'In 1930 he joined the staff of Gordon Leith [*F*], in whose extensive practice he developed his unique administrative and organisational ability. He was a member of the firm of Gordon Leith and Partners from 1935 to 1950, when he decided to establish his own practice. By this time he was known as an authority on, *inter alia*, hospital architecture. His own practice grew to such an extent that he entered into partnership with E. F. Allen (a well-known Johannesburg quantity surveyor) as Haddon and Allen. Together they were responsible for the United Building Society Head Office, Johannesburg.

'No architect could possibly do more for his profession than did Dave Haddon. He served for more than 20 years, continuously, as a Committee member of the Transvaal Provincial Institute, and as a member of the Central Council of the Institute of South African Architects. He alone had the signal honour of being elected President-in-Chief of the Institute three times, and of being elected Honorary Adviser to the Central Council. In addition, he was for more than ten years Chairman of the Institute's Board of Education and a member of the Board of the Faculty of Architecture of the University of the Witwatersrand. He was an outstanding authority on professional practice and on professional education.

'Apart from his unique record of service to the Institute, Dave Haddon will long be remembered by the many, many architects, of all ages, who went to him for advice on professional problems.'

Eric Rowlstone Jarrett [*A*], who was on the teaching staff of the Architectural Association School of Architecture for many years, died on 20 February 1959, aged 70.

He was Studio Master at the A.A. from 1919 to 1936 and retired from the A.A. teaching staff in 1950. He was Editor of the A.A. JOURNAL from 1924 to 1949.

Mr. Jarrett served for many years on the R.I.B.A. Literature Standing Committee and as an Examiner for the Intermediate Examination.

He had a considerable knowledge of typography and redesigned the cover of THE BUILDER in 1947. He was also very good at colour photography and after his retirement he lectured all over the country, illustrating his lectures with his photographs.

Mr. L. H. Bucknell [*F*] writes:

'We met many years ago in the first atelier of architecture in Wells Mews. As our friendship developed I learnt to appreciate his outlook on architecture. He had been brought up in the school of fine craftsmanship and meticulous detail and he was amply interested in the arts and crafts allied to architecture.

'He was not so interested in building as in study and he had the qualities of a good teacher particularly for the younger student. He joined the A.A. in its formative years and was an undoubted success. It soon became apparent that Jarrett regarded teaching as his life work and the A.A. became second home to him. He kept his interest in young people right up to the end of his life and many remember him with affection and a deep appreciation of his teaching and encouragement.'

Colin Lancelot Jones [*F*] died on 24 January 1959, aged 65.

Mr. Jones was educated at St. Dial's School, Cwmbran, and at West Monmouthshire Grammar School, Pontypool. In 1909 he was articled to the late F. R. Bates [*L*] of Newport. Later he was assistant to several architects in Cardiff. While there he was instrumental in forming the Cardiff Architectural Design Club, which was run in conjunction with the South Wales Institute of Architects and from this club the first Welsh Atelier originated, to become eventually a section of the Welsh School of Architecture and of the University College of South Wales and Monmouthshire.

After 1919 he collaborated with Mr. C. F. Bates [*F*] in architectural competition work and they prepared designs and obtained awards in open competitions for many different types of buildings, including the Newport cenotaph.

Other successes were awards for housing designs at Pontypool and Panteg and for a block of market buildings in High Street, Newport.

In 1925 he was appointed Assistant Architect to Monmouthshire Education Committee and eleven years later Architect, and in 1938 he became Monmouthshire County Architect. He had announced his intention of retiring from this post in March.

He had been responsible for the building work of all committees of the County Council, including, since 1945, 23 primary and infants schools and eight secondary and further education schools. Recent examples of his work are the fire stations at New Inn, Caldicot and Abersychan, as well as clinics and homes for the aged and children.

Mr. Jones was a past Chairman of the Eastern (Newport) Branch of the South Wales Institute of Architects and had represented that body on the Allied Societies' Conference.

Cyril Ludford [*L*] died on 16 February 1959.

Mr. William A. Guttridge [*F*], partner in the firm of Adams, Holden and Pearson [*F*/*A*], writes:

'Mr Ludford was employed as chief draughtsman and designer to a firm of cabinet makers up to the end of 1934. Dr. Charles Holden [*F*] then brought him into the team working on the Senate House and Libraries of the University of London; his special province was, of course, the interpretation of Dr. Holden's designs for the richly finished ceremonial rooms, libraries, halls and so on.

'In working in this office Mr. Ludford developed his inherent talent for interior decoration and furniture design as well as a very expert and individual style of architectural perspective. He decided to become a member of the architectural profession and became a Licentiate in 1941. He was an excellent draughtsman and produced many magnificent drawings in connection with the City of London Plan and other town planning schemes.

'He continued to work on the London University Buildings up to the time of his death when he was engaged on the new Periodicals Library and also on the extensive alterations to the Institute of Electrical Engineers.'

John Drummond Macpherson Moore, F.R.A.I.A. [*F*], died on 9 December 1958, aged 70.

Mr. Moore, who was born in Sydney, Australia, was educated at Sydney Grammar School and was later articled to Messrs. McRedie and Richardson of Sydney. In 1913 he joined the New York office of Mr. Bertram Goodhue, the American architect, but the following year came to London, joined the Royal Engineers and was later commissioned in France. After the war he worked for another year with Mr. Goodhue and finally returned to Australia in 1920, where he set up practice in Sydney. He was partner in the firm of Wardell, Moore and Dowling from about 1928, of Moore and Dowling from 1935 to 1942, of Moore and Ward from 1943 to 1949 and of Moore, Walker and Croaker from 1950.

He was principally concerned with work for Frensham School, Mittagong, and Tudor House School, Moss Vale, for Lewisham Hospital, St. Vincent's Hospital, Mount St. Margaret's Hospital and hospital work in Hobart, and for Sancta Sophia College in the University of Sydney. Other work included churches, banks and houses.

But Mr. Moore also had the reputation of being one of Australia's most progressive painters and a fine draughtsman, and his work is represented in the Victoria and Albert Museum, the National Gallery of Victoria, Melbourne, and in galleries at Sydney, Brisbane and Adelaide. He painted in both oils and water-colour and was primarily a landscape artist: probably his best-known work is his painting of Sydney Harbour. For many years he was the Vice-President of the Society of Artists and a member of the Contemporary Group of Sydney. He had also served on the committee which awards the Blake Prize. In the Second World War he was Deputy Director of Camouflage in New South Wales from 1942 to 1945.

He was a foundation member of the Royal Australian Institute of Architects and had served on the Council of the New South Wales Chapter.

Frank John Osborne, M.C. [*F*], died on 15 April 1959, aged 73.

Mr. Osborne was educated at Solihull School and the Birmingham School of Architecture and after serving his articles with his father, the late John P. Osborne [*F*], he was taken into partnership in 1912. After his father's retirement and death in 1934, Mr. Osborne continued the practice on his own account until he was joined in partnership by his son, Colonel John L. Osborne, M.B.E., T.D. [*A*], in 1947. Colonel Osborne is now continuing the practice of John P. Osborne and Son.

The practice was a general one and included churches, industrial work, private houses, public houses and hospitals. Mr. Osborne's principal works included the Nurses' Home at Hallam Hospital; Public Health Clinic, Great Charles Street, Birmingham, and many of the city's public libraries; Moseley and Northfield Methodist churches, and All Saints' Church, Shard End.

Mr. Osborne had served on the Council of the Birmingham and Five Counties Architectural Association for approximately twenty years, and had been Vice-President from 1945 to 1947 and President from 1948 to 1950, when he represented that body on the R.I.B.A. Council and the Allied Societies' Conference.

During the First World War he had served as a captain in the Royal Engineers, winning the Military Cross in Flanders, and in the last war he had commanded a Home Guard unit.

Sir George Pepler, C.B., F.R.I.C.S., P.P.T.P.I. [*Hon. A*], died on 13 April 1959, aged 77.

Mr. U. Aylmer Coates, P.T.P.I. [*F*], writes:

'George Lionel Pepler was born at Croydon and educated at Bootham and Leys Schools. He was articled to Walter Hooker, starting in private practice with E. G. Allen [*F*] in 1903, and later joining Thomas Adams, as a surveyor and town planning consultant. With them he built up an extensive practice in estate developments on garden city lines for owners of large estates such as Sir Richard Paget at Fallings Park and Lord Lytton at Knebworth.

'In 1914, when John Burns was President of the Local Government Board, he succeeded Thomas Adams as Planning Adviser and Inspector. In the same year, together with Adams, Adshead, Geddes, Lutyens, Unwin, Aston Webb and others, he helped to inaugurate the Town Planning Institute and was its first Honorary Secretary and Honorary Treasurer—posts which he held until his death; he was twice President of the Institute, in 1919 and 1949, and in 1953 he was awarded the Institute's Gold Medal. For eight years he was President of the International Federation for Housing and Planning and from 1952 its Honorary President. He was made a Vice-President of the Garden Cities and Town Planning Association in 1938 and was a member of the Council and Executive Committee of the Town and Country Planning Association.

'In his thirty years as a civil servant he saw the Local Government Board change its name many times, as did his own designation—but always he was in the forefront, animating planning thought throughout the country, until finally, before leaving government service in 1946, he had seen town and country planning firmly established as a normal and imperative function of government and his Ministry of Town and Country Planning—as it was known for a brief spell—had added to its role of critic to become a sponsor of research and of creative work. And on his retirement he sought not a life of idyllic rest but returned to a vigorous private practice—adviser to the Singapore Improvement Trust, member of the Royal Commission on Common Land and his work on playing fields and rural preservation. He was knighted in 1948.

'Pepler's career spanned the 50 years of statutory planning which had elapsed since the passing of the first British planning legislation—the adoptive Act of 1909. Even then he saw land use planning as more than a contribution to the housing problem—important as that is. Through his imagination and as his experience matured he developed his capacity to put himself in the place of those who had to live and work in the community and for whose physical environment he had a real and critical understanding. He believed in town planning as a social process calling for wide human sympathies in those who were privileged to practise it and saw it as far more than a technology to be learnt from textbooks. Probably no single person had more influence in developing the social and geographical concept of planning.

'Those who shared his friendships will remember his fine mind, his gift of perpetual youth and his wisdom, and planners throughout the world will be for ever in his debt.'

William Joseph Mate Thomasson [*Retd. A*] died on 29 April 1959, aged 79.

Mr. Thomasson started his architectural training in Worcester. About 1910 he joined the staff of Bournemouth Borough Council where he remained, apart from war service as a captain in the Royal Engineers, until 1920. He then took up an appointment with the Devon County Council in the Smallholdings Department, which was concerned with the resettlement of ex-servicemen. This department later became the County Architect's Department and Mr. Thomasson became Deputy County Architect. He retired in 1947. He had since then gone into private practice.

A devout Quaker, Mr. Thomasson was a one-time clerk to the Exeter Meeting, and compiled a history of 'Friends of East Devon'. He rediscovered a number of old Quaker meeting houses, and one of them, at Spicelands, Uffculme, was reopened for meetings.

Charles Frederick Ward, M.B.E. [*F*], died on 29 January 1959, aged 79.

Mr. Johnson Blackett [*F*], Borough Architect of Newport, writes:

'Born at West Bromwich, Mr. Ward was educated at Tettenhall College, Staffs., and Mason's College, Birmingham, and was articled to Messrs. William Henman and Thomas Cooper [*FF*] of Birmingham. He joined the staff of the London County Council in 1902 and was engaged upon various large schemes, including Greenwich Generating Station.

'In 1904 Mr. Ward was appointed Newport's first Borough Architect. Examples of his work

include the Carnegie Free Library, Newport Technical College, and the old Municipal Secondary School, Tredegar Wharf School, Gaer School, Maesglas Junior Infants' School, St. Julian's High School, business premises and offices in High Street and Maindee Swimming Baths. In 1919 he prepared the layout and design of Somerton housing estate, the first housing scheme in Newport. After that he became responsible for the continuance of Corporation housing schemes in connection with 1,328 houses.

'Mr. Ward acted as joint assessor for the competition for Newport's Civic Centre in 1936 for which he also drew up the conditions.

'During the Second World War, Mr. Ward was responsible for the layout and equipment of all first-aid posts, ambulance depots, wardens' posts, National Fire Service buildings, nursery schools, British restaurants, cooking depots and school dining-rooms and kitchens. He supervised repairs to some 4,500 houses damaged by enemy action.

'Before his retirement in 1945, he was engaged on the post-war planning of temporary and permanent houses. A large scheme presented to the Council for improvements from High Street to the Civic Centre, including a proposed new omnibus station over the railway yard, was prepared under his direction.

'In 1936 Mr. Ward was presented with the King George V Medal for services to the municipality.

'Keenly interested in his profession, in 1912 Mr. Ward started the Doric Club in Newport to foster the interest of younger members. The Club was the foundation of the Eastern Branch of the South Wales Institute of Architects of which he was Chairman for several years. He was President of the South Wales Institute of Architects from 1925 to 1927 and a member of the R.I.B.A. Council in the same period. He also served on the R.I.B.A. Town Planning and Housing Committee and many other committees.

'Mr. Ward had not been in retirement many months before the Ministry of Housing and Local Government in Cardiff asked him to take up an appointment as Senior Regional Architect where his great experience was of the utmost value during the immediate post-war housing drive. In 1952 he retired from the Ministry and in June of that year was awarded the M.B.E., finally setting up in private practice until 1956.'

Francis Gordon Wilson, F.N.Z.I.A. [*A*], died on 23 February 1959, aged 58.

Mr. Wilson was born in Perth, Western Australia, the son of Francis John Wilson, an architect. He was educated at the Technical School, Wellington, and the School of Architecture, Auckland.

In 1916 he became a pupil to the late William M. Page [*F*] and eventually worked in the office of Messrs. Gummer and Ford [*FF*] in Auckland as draughtsman and chief assistant. In 1928 he was taken into partnership and he remained so until 1936.

During this time he was associated in the design of the Dilworth Trust Building, the Dingwell Trust, Dingwell Orphanage, the Auckland Railway Station and the Remuera Library (for which the firm was awarded the N.Z.I.A. Gold Medal for 1931), all in Auckland; and in Wellington, the National Art Gallery, Dominion Museum and National War Memorial Carillon, the Central Library and the N.Z. Insurance Company Building.

In 1936 he became Architect to the Housing Construction Department of the New Zealand Ministry of Works, which began an extensive programme of building homes for rental by the State. He became Chief Architect of the Housing Division in 1946, Assistant Government Architect in 1948 and Government Architect in 1952.

As leader of the Departmental team responsible for the design of the Dixon Street Flats, Wellington, he was awarded the N.Z.I.A.'s Gold Medal for the year 1947. Other work included the multi-storeyed Government Office Departmental Building at Auckland and the Departmental Building in Bowen Street, Wellington (now in course of erection), multi-storeyed flat buildings in Auckland and Wellington, the Dental School, Otago University, and the School of Engineering, Canterbury University (both under construction). His housing work did much to bring about an improvement in the standard of house construction in planning in aspect and in the general character of design.

Mr. Wilson made several visits to this country and the United States, and was last in Britain in December 1957 to consult with Professor Robert Matthew [*F*] and Mr. Percy Johnson-Marshall [*A*] on the sketch plans for the New Zealand House Building.

Mr. Wilson was Chairman of the Wellington District Branch of the N.Z.I.A. in 1955 and 1956 and a member of the N.Z.I.A. Council and the Executive Committee from 1955 until his death. He was also a council member of the Association of New Zealand Art Societies and of the Council of the National Historic Places Trust, on both of which he represented the N.Z.I.A.

John Wilson, O.B.E., F.R.S.E. [*Retd. F*], died on 20 January 1959.

Mr. Wilson was a pupil of the late Sir George Washington Browne and worked in the offices of Messrs. Robert Wilson and Dick Peddie. He studied at the Edinburgh School of Applied Art, where he won a travelling studentship. He entered Government service in 1911 and in 1928 was appointed Chief Architect to the Department of Health for Scotland. He retired from that position in 1942.

Since the First World War Mr. Wilson had been an important directive influence in Scottish housing schemes and had done a considerable amount of research into methods and materials. He was a member of the Committee of Inquiry into the High Cost of Building Working Class Dwellings in Scotland in 1921, of the Moir Committee of 1925, which investigated new methods of house construction, of the Departmental Committee on the Construction of Flats for the Working Classes in 1935, and of the Scottish Architectural Advisory Committee of the same year. He had also served on the D.S.I.R. Building Research Board. Shortly after the Second World War he went to Holland to investigate housing methods on a community basis. He was made an O.B.E. in 1941.

His report on the design, construction and materials of small dwelling houses was printed as an appendix to that of the Royal Commission on Housing in Scotland; and he also wrote on 'The Planning of Sanatoria, Hospitals and Other Public Health Institutions', 'Hospital Planning and Construction', 'The Planning and Construction of Flatted Blocks', and 'Town Planning in Relation to Public Health'.

In later life Mr. Wilson suffered the heavy handicap of blindness, an affliction which he bore with courage.

[The foregoing is by courtesy of THE SCOTSMAN.]

Mr. Wilson was a past President of the Royal Incorporation of Architects in Scotland and had served on the R.I.B.A. Council as a representative of Allied Societies in Scotland.

Membership Lists

ELECTION: 16 JUNE 1959

The following candidates for membership were elected on 16 June 1959.

AS FELLOWS (6)

Hill: Richard Towning, A.A.Dipl. [*A* 1948], Bristol.
Jobson: William John, E.R.D. [*A* 1935], Oxford.
Lewis: Herbert John Whitfield, Dip.Arch. (Cardiff), R.I.B.A. Distinction in Town Planning [*A* 1934].
Shepheard: Peter Faulkner, B.Arch.(L'pool), R.I.B.A. Distinction in Town Planning, A.M.T.P.I., F.I.L.A. [*A* 1938].
Stower: Frank, A.M.T.P.I. [*A* 1936].
West: Frank George, [*A* 1936].

AS ASSOCIATES (49)

Avis: David John, A.A.Dipl., Zaria, Nigeria.
Batliwala: Daraius Minocher, Bombay, India.
Bawa: Geoffrey, M.A.(Cantab.), A.A.Dipl. Colombo, Ceylon.
Britch: Arthur Lancaster, B.A.(Arch.), B.Sc. (Tech.)(Manchester), Manchester.
Brooks: John Raymond, B.A.Arch.(Lond.), Nairobi, Kenya, East Africa.
Butcher: Raymond Dennis, Dip.Arch.(C.T.), Salisbury, Southern Rhodesia.
Carrier: Michael John, B.A.(Arch.)(London).
Carter: Campion Charles, Dip.Arch.(Cardiff), Newport, Mon.
Chan: Edwin Chin Tan, B.Arch.(N.S.W. Univ. of Technology), Singapore, Malaya.
Cooper: Ivie Richard, D.A., Dip.T.P.(Glas.), Greenock,
Deobhakta: Madhav Ganesh, Bombay, India.
Devonald: Anthony David Graham, B.Arch. (L'pool.), Oxted.
Dubash: Minoo Jamshedji, Bombay, India.
Edwards: Maurice, Dip.Arch.(Manchester), Newcastle, Staffs.
Evans: David Thomas Siarlys, Dip.Arch. (Cardiff).
Evans: Gareth Heddwyn, Dip.Arch.(Cardiff), Cardiff.
Fallon: John Padraic, Dipl.Arch.(Kingston), Redhill.
Foo: Paul Yoon Sen, B.Arch.(Melbourne), Penang, Malaya.
Francis: John Wakefield, Dipl.Arch.(Oxford), Zaria, Nigeria.
Gentle: Desmond John Stonebridge, A.A.Dipl.
Gill: Edgar Leonard, B.Arch,(Rand), Johannesburg, South Africa.
Gunasekara: Valentine Kumarasiri, A.A.Dipl., Colombo, Ceylon.
Hadkar: Bhalchandra Ganesh, Bombay, India.
Haskoll: Michael, Dip.Arch. (The Polytechnic).
Higton: Ian Watson, Dip.Arch.(Manchester), Glossop.
Holland: James Michael, Dip.Arch.(Manchester), Bolton.
Jamieson: William Millar, D.A.(Glas.), Glasgow.
Jones: Dennis Hankey, Dip.Arch.(Dunelm), Gateshead.
Karani: Pranlal Prabhudas, Bombay, India.
Karekar: Shantaram Krishnaji, Dipl.Arch. (U.C.L.), Bangalore, India.
Lawrence: Neville Treleaven, Mombasa, Kenya, East Africa.
Lloyd: Clifford Edward Abbott, B.Arch.(L'pool.), Liverpool.
Lynn-Jones: David Musson, Dip.Arch.(Cardiff), Jamestown, New York, U.S.A.
McCormack: Jeffrey Andrew, Dipl.Arch. (Kingston), Thames Ditton.
Madan: Sharad Yeshwant, Bombay, India.
Modinos: Alexander Fotis, D.A.(Glas.), Nicosia, Cyprus.
Murison: Hamish Stewart, Dip.Arch.(Abdn.), Elgin.
Naik: Chandrakant Prabhakar, Bombay, India.
Odeinde: Olufemi Abayomi, Dipl.Arch.(Hull), Ibadan, Nigeria.
Patki: Prabhatkumar Gajanan, Bombay, India.
Penkar: Jacob Menashe, Baroda, India.
Razdan: Narrendra Nath, B.Sc.(Delhi), Bombay, India.
Scarr, Wilfrid Keith, Zomba, Nyasaland.
Shalovsky: Gerald Harold, B.Arch.(C.T.), Salisbury, Southern Rhodesia.

Sidhaye: Jayant Gopal, Bombay, India.
Smith: Michael Slade, Dip.Arch.(Birm.), Frampton-on-Severn.
Stokes: Robert Morley, Dip.Arch.(Birm.), Keynsham.
Thomas: Arthur Frederick Meredith, Nairobi, Kenya, East Africa.
Yang: Tai Tye, Dip.Arch.(Birm.).

ELECTION: 8 DECEMBER 1959

An election of candidates for membership will take place on 8 December 1959. The names and addresses of the overseas candidates, with the names of their proposers, are herewith published for the information of members. Notice of any objection or any other communication respecting them must be sent to the Secretary, R.I.B.A., not later than Friday, 13 November 1959.

The names following the applicant's address are those of his proposers.

AS FELLOWS (4)

Gunaratna: Neville Harris de Silva Abeysinghe, Dip.T.P.(Edin.), A.M.T.P.I. [*A* 1947], Department of Town and Country Planning, McCallum Road, Colombo, Ceylon; 562/15a Kollupitiya, Colombo 3. O. Weerasinghe, N. Wynne-Jones, H. E. Gonsal.

Lewis: Arthur Herbert, A.A.Dipl. [*A* 1949], Horace Williams and Partners, Legal and General Building, P.O. Box 73, Kitwe, Northern Rhodesia. P. D. Lawson, Michael Pattrick, G. A. Jellicoe.

Meehan: George, D.A.(Glas.) [*A* 1950], P.W.D. Headquarters, Maxwell Road, Kuala Lumpur, Federation of Malaya. T. A. L. Concannon, K. J. Ball, C. Y. Koh.

and the following Licentiate who passed the qualifying examination:—

Underwood: George, Public Works Department, Public Buildings, 313–315 Wellington Street, Launceston, Tasmania. Roy Smith, B. L. Dechaineux, C. E. Philp.

AS ASSOCIATES (55)

The name of a school, or schools, after a candidate's name indicates the passing of a recognised course.

Alexander: Simon, B.Arch.(C.T.), (Passed a qualifying exam. approved by the I.S.A.A.), 515 African Homes Trust, 38 Wale Street, Cape Town, South Africa. Prof. L. W. T. White and applying for nomination by the Council under Bye-law 3(*d*).

Andersson: Brian Anthony Terence, Dip.Arch. (Natal),(Passed a qualifying exam. approved by the I.S.A.A.), c/o J. Meanwell, Esq., P.O. Box 7, Pietermaritzburg, Natal, South Africa. Applying for nomination by the Council under Bye-law 3(*d*).

Barratt: Peter John Henry, Dip.Arch.(Birm.), (Birmingham Sch. of Arch.), 20 Kingsway, Valletta, Malta, G.C. A. Douglas Jones, F. W. B. Charles, R. Edmonds.

Bell: David Burnett, Dip.Arch.(Queensland), (Passed a qualifying exam. approved by the R.A.I.A.), Pacific Highway (Opp. View Avenue), Surfers Paradise, Queensland, Australia. J. A. Weller, E. P. Trewern, H. M. Cook.

Billingham: John Kynaston, Dip.Arch.(Manchester), (Victoria Univ. Manchester: Sch. of Arch.), c/o Planning Board, City Hall, Kingston, Ontario, Canada. Prof. R. A. Cordingley, Prof. Gordon Stephenson, E. S. Benson.

Bogue: Brian Patrick, B.Arch.(McGill), (McGill Univ. Montreal, Canada: Sch. of Arch.), Avenida Presidente Wilson, 164 Sala 414, Rio de Janeiro, Brazil. Applying for nomination by the Council under Bye-law 3(*d*).

Bonamour: Arthur Joseph Montgomery, (Passed a qualifying exam. approved by the I.S.A.A.), c/o Clement R. Fridjhon, Esq., 509 United Buildings, Smith Street, Durban, Natal, South Africa. The late E. M. Powers, A. M. Allen and applying for nomination by the Council under Bye-law 3(*d*).

Bowman: Denis Mortlock, (Final), 40 Park Road, Toronto 5, Ontario, Canada. J. M. Scott, P. F. Burridge, L. J. Selby

Brenton: Benjamin Francis, Dip.Arch.(Auck. N.Z.), (Passed a qualifying exam. approved by the N.Z.I.A.), Ministry of Works, P.O. Box 1479, Christchurch, New Zealand. Prof. C. R. Knight, D. H. S. Prince, Prof. A. C. Light.

Brown: Norman Millar, D.A.(Glas.), (Glasgow Sch. of Arch.), 59A Oriole Road, Toronto 7, Ontario, Canada. J. C. Parkin, J. B. Parkin, Prof. W. J. Smith.

Carter: Philip William, (Special Final), Ministry of Works, P.O. Box 30043, Nairobi, Kenya. D. B. Mills, W. Alp, C. J. Crowe.

Davies: Idris Glynn, Dip.Arch.(The Polytechnic), (The Poly, Regent Street, London: Sch. of Arch.), P.O. Box 521, Nairobi, Kenya. Idris Davies, J. S. Walkden, J. S. Foster.

Dewhurst: Derek Richard, (Final), 414 Pockets Building, 30 Stanley Avenue, Salisbury, Southern Rhodesia. A. L. Spencer, Clifford Duke, P. D. Lawson.

Douglas: John Conrad, B.A.(Arch.) (Sheffield), (Univ. of Sheffield: Dept. of Arch.), P.O. Box 628, Port of Spain, Trinidad, W.I. Prof. Stephen Welsh, H. B. Leighton, Prof. John Needham.

Driver: Haddon Keith, B.Arch.(Natal), (Passed a qualifying exam. approved by the I.S.A.A.), c/o Messrs. Rinaldi, Macdonald & Harvey, 318 Tanganyika House, Salisbury, Southern Rhodesia. R. C. Rinaldi, L. F. R. Coote and applying for nomination by the Council under Bye-law 3(*d*).

Featherstone: Kenneth Anthony, (Final), The School of Architecture, University of Manitoba, Winnipeg, Canada. Cecil Stewart, H. T. Seward, Sir Hugh Casson.

Fick: Willem Liebrecht, (Passed a qualifying exam. approved by the I.S.A.A.), 73 Riemar Court, Celliers Street, Sunnyside, Pretoria, South Africa. R. C. Abbott and applying for nomination by the Council under Bye-law 3(*d*).

Fleischmann: (Mrs.) Elsa, B.Arch.(C.T.), (Passed a qualifying exam. approved by the I.S.A.A.), 'Laundry Cottage', Durban Road, Wynberg, Cape, South Africa. Prof. L. W. T. White and applying for nomination by the Council under Bye-law 3(*d*).

Foong: Yue Seng, B.Arch.(Melbourne), (Passed a qualifying exam. approved by the R.A.I.A.), 113 High Street, Kuala Lumpur, Malaya. Prof. B. B. Lewis, R. G. Parker, Mrs. Hilary Lewis.

Fraser: Neil Mackintosh, (Passed a qualifying exam. approved by the I.S.A.A.) 18 New England Road, Pietermaritzburg, South Africa. Applying for nomination by the Council under Bye-law 3(*d*).

Ghany: Mohammad Bin Abdul, B.A.(Arch.) (Sheffield) (Univ. of Sheffield, Dept. of Arch.), Public Works Department, Kelantan, Kota Bharu, Malaya. Applying for nomination by the Council under Bye-law 3(*d*).

Gilbert: Stephen Hamilton, B.E.(Adelaide), (Passed a qualifying exam. approved by the R.A.I.A.), 24 Brougham Place, North Adelaide, South Australia. D. W. Berry, Gavin Walkley, Prof. R. A. Jensen.

Gladstone: John Michael Christopher, (Passed a qualifying exam. approved by the R.A.I.A.) 12 Lisson Grove, Hawthorn, Melbourne, Victoria, Australia. Prof. B. B. Lewis, Mrs. Hilary Lewis, R. G. Parker.

Gomez Hall: John Ferdinand, (Final), Zurbano 52, Madrid, Spain. C. S. White, K. D. P. Murray, S. C. Ramsey.

Hansen: Gary Valentine, (Final), c/o Peter Dickenson, Associates, 1910 Yonge Street, Toronto, Ontario, Canada. Frederick Gibberd, A. E. Kelsey, R. J. Double.

Heah: Johnny Hock Aun, M.A. (Cantab), Dipl.Arch.(U.C.L.), (Bartlett Sch. of Arch.: Univ. of London), 30 Codrington Avenue, Penang, Malaya. Applying for nomination by the Council under Bye-law 3(*d*).

Heugh: David, D.A.(Edin.) (Edinburgh Coll. of Art: Sch. of Arch.), Hyltebjerg Alle 67, Vanlose, Copenhagen, Denmark. Applying for nomination by the Council under Bye-law 3(*d*).

Housden: Warwick Henry George, B.Arch. (L'pool.) (Liverpool Sch. of Arch., Univ. of Liverpool), Apt. 10, 7 Wingreen Court, Don Mills, Ontario, Canada. Prof. R. Gardner-Medwin, R. R. Young, B. A. Miller.

Hughes: Norman McLaurin, (Passed a qualifying exam. approved by the R.A.I.A.), 7 Gilda Avenue, Wahroonga, New South Wales, Australia. S. E. T. Cusdin, F. L. Preston, Sir Howard Robertson.

Isham: Norman Murray Crawford, B.Arch. (C.T.), (Passed a qualifying exam. approved by the I.S.A.A.), The Chequers, 5 Orchard Close, Avondale, Salisbury, Southern Rhodesia. Prof. L. W. T. White and applying for nomination by the Council under Bye-law 3(*d*).

Kenney: William, Dip.Arch.(Auck.N.Z.), (Passed a qualifying exam. approved by the N.Z.I.A.), 188 Cockayne Road, Wellington, N.4, New Zealand. Prof. C. R. Knight and the President and Hon. Secretary of the N.Z.I.A. under Bye-law 3(*a*).

Lester: Leslie Neville, B.Arch.(Natal), (Passed a qualifying exam. approved by the I.S.A.A.), 824 Poynton House, Gardiner Street, Durban, South Africa. Applying for nomination by the Council under Bye-law 3(*d*).

Louw: Tobias Johannes Wynand, B.A.(Stellenbosch), B.Arch.(C.T.), (Passed a qualifying exam. approved by the I.S.A.A.), Santam Building, Main Street, Paarl, South Africa. Prof. L. W. T. White and applying for nomination by the Council under Bye-law 3(*d*).

Love: Lloyd Craig, (Passed a qualifying exam. approved by the N.Z.I.A.), Durham Street, Ashhurst, Palmerston North, New Zealand. W. Thorrold Jaggard and the President and Hon. Secretary of the N.Z.I.A. under Bye-law 3(*a*).

McCulloch: Robert, (Special Final), 40 Talbot Road, Willowdale, Ontario, Canada. G. A. Crockett. L. S. Stanley, J. C. Parkin.

Manwaring: Anthony Ernest, (Passed a qualifying exam. approved by the I.S.A.A.), 50 Skyline House, Orange Street, Cape Town, South Africa. Prof. L. W. T. White and applying for nomination by the Council under Bye-law 3(*d*).

Marshall: Albert Alan, (Special Final), P.O. Box 3256, Kampala, Uganda, East Africa. E. D. Mills, J. L. Hope and applying for nomination by the Council under Bye-law 3(*d*).

Mascarenhas: Merwyn Mathias, (Final), Inayat Manzil, Balamia Lane, Mahim, Bombay 16, India. Prof. S. S. Reuben, S. H. Parelkar, H. N. Dallas.

Meldrum: Richard John, B.Arch.(Melbourne), Dip.Arch.(Melbourne), (Passed a qualifying exam. approved by the R.A.I.A.), 29 Loch Street, Camberwell, E.6, Victoria, Australia. P. H. Meldrum, R. S. Demaine, W. P. R. Godfrey.

Miller: Glyn Owen, (Special Final), P.O. Box 30316, Nairobi, Kenya. Applying for nomination by the Council under Bye-law 3(*d*).

Orme: Bryan Clarke, B.Arch.(C.T.), (Passed a qualifying exam. approved by the I.S.A.A.) P.O. Box 926, Kitwe, Northern Rhodesia. Prof. L. W. T. White, O. Pryce Lewis and applying for nomination by the Council under Bye-law 3(*d*).

Palmoja: Kalju, (Passed a qualifying exam. approved by the R.A.I.A.), 10 Burtway, Flat 4, Perth, Western Australia. A. E. Clare, H. T. Forbes, E. L. B. Henderson.

Percival: Edwin Philip, Dip.Arch.(Auck. N.Z.), (Passed a qualifying exam. approved by the N.Z.I.A.), 86 Nixon Street, Wanganui, New Zealand. Prof. C. R. Knight, M. K. Draffin, Prof. A. C. Light.

Pereira: George Carlo, (Special Final), 8 Palm Road, Singapore 16, Malaya. Paul Nightingale, Arthur Korn, Dr. R. Herz.

Roberts: Robert Bain (Passed a qualifying exam. approved by the R.A.I.A.), 56 Second Avenue, St. Peters, Adelaide, South Australia, Gavin Walkley, W. J. M. Sedgely, L. Laybourne-Smith.

Schonegevel: Mervin Carstens, B.Arch.(C.T.), (Passed a qualifying exam. approved by the I.S.A.A.) c/o Messrs. Kantorowich and Skacel, 707 Federated House, 56 Shortmarket Street, Cape Town, South Africa. Prof. L. W. T. White and applying for nomination by the Council under Bye-law 3(*d*).

Smith: Darrell Bertrand, B.Arch.(Rand), (Passed a qualifying exam. approved by the I.S.A.A.), City Architects Department, Cleveland House, Salisbury, Southern Rhodesia. C. A. Knight, W. F. Hendry, L. F. R. Coote.

Smith: John Churchill, (Final), 51 Woodlawn Ave. West, Toronto 7, Ontario, Canada. Applying for nomination by the Council under Bye-law 3(*d*).

Taylor: David John, Dip.Arch.(Auck.N.Z.), (Passed a qualifying exam. approved by the N.Z.I.A.), P.O. Box 282, 192 The Square, Palmerston North, New Zealand. W. Thorrold-Jaggard and the President and Hon. Secretary of the N.Z.I.A. under Bye-law 3(*a*).

Thong: Choe Loen Raymond, B.E. (Adelaide), (Passed a qualifying exam. approved by the R.A.I.A.), 19 Love Lane, Penang, Malaya. Gavin Walkley, Prof. R. Jensen, R. V. Boehm.

Thorpe: Percy, (Final), 646 Bathurst Street, Toronto 4, Ontario, Canada. Forsey Page, Frank Risdon and applying for nomination by the Council under Bye-law 3(*d*).

Van der Walt: Bernardus Rijks, B.Arch.(C.T.), (Passed a qualifying exam. approved by the I.S.A.A.), P.O. Box 926, Kitwe, Northern Rhodesia. Prof. L. W. T. White, O. Pryce Lewis, Horace Williams.

Warrilow: Dennis F., B.Arch.(Wales), (Welsh Sch. of Arch.: The Tech. Coll., Cardiff), Ste 9 Mayfair Apts., 135 Mayfair Ave., Winnipeg 13, Manitoba, Canada. Applying for nomination by the Council under Bye-law 3(*d*).

Yoong: Siew Cheong, Dip.Arch.(Auck.N.Z.), (Passed a qualifying exam. approved by the N.Z.I.A.), 7 Jalan Endah, Petaling Jaya, Malaya. C. R. Ford, Charles Towle, Prof. C. R. Knight.

Zwart: Wiebe Jilling, B.Arch.(Natal), (Passed a qualifying exam. approved by the I.S.A.A.), P.O. Box 395, Pretoria, South Africa. Applying for nomination by the Council under Bye-law 3(*d*).

Members' Column

This column is reserved for notices of changes of address, partnerships vacant or wanted, practices for sale or wanted, office accommodation, and personal notices other than of posts wanted as salaried assistants for which the Institute's Employment Register is maintained.

APPOINTMENTS

Mr. David B. Cockburn, A.M.T.P.I. [*A*], has been appointed Senior Architect with the Fife County Council and his address is now c/o County Architect's Department, County Buildings, Cupar, Fife (Cupar Fife 2285).

PRACTICES AND PARTNERSHIPS

Messrs. Frederick Barber and Partners of Surrey, have changed their name to **Barber, Bundy and Greenfield.** The practice will be continued as previously with **Mr. Frederick Barber,** M.B.E. [*F*], at 5 Apple Market, Kingston-upon-Thames, **Mr. K. Douglas Bundy** [*A*], at 183–4 High Street, Guildford, and **Mr. Bevil Greenfield** [*A*], at 173 High Street, Dorking.

Mrs. Olive Belchamber (née More) [*A*] has started private practice in Lusaka, Northern Rhodesia. Her address is P.O. Box R.W. 80, Lusaka.

Mr. H. W. Curry [*A*], who was formerly in partnership with **Mr. Jack Smith** [*F*] (not John Smith, as given in the June issue of the JOURNAL) is continuing practice on his own account from 64 Bradford Road, Dewsbury (Dewsbury 3831).

Mr. H. W. Curry [*A*] and **Mr. C. J. Horsfall** [*A*] are continuing the practice of **Smith, Curry and Horsfall** at Elms Chambers, Castleford, following the withdrawal of **Mr. Jack Smith** [*F*] from the partnership.

Messrs. K. Dalgliesh and R. K. Pullen [*FF*] have taken **Mr. L. B. Ingram** [*A*] into partnership under the style of **Dalgliesh and Pullen.** Their address has been changed to 23 Old Bond Street, London, W.1 (Hyde Park 0935–6).

Messrs. Alec Feldman and Partners (**Alec Feldman** [*L*] and **David Bennis** [*A*]) of Queen's House, 12 Queen Square, Brighton, have opened a London office at Verger's House, Shoreditch Church, London, E.1 (Shoreditch 6663). They are now practising from both addresses under the new style of **Feldman and Bennis** and will be pleased to receive trade catalogues, etc.

Mr. Eric W. Hall [*A*] has taken **Mr. J. E. Douglas Sanderson** [*A*] and **Mr. W. Alistair Miller** [*A*] into partnership under the style of **Eric W. Hall and Partners** at Rock House, Calton Hill, Edinburgh.

Mr. H. A. Halpern [*A*] is now practising under the style of **H. A. Halpern and Associates.** A London office has been opened at Cumberland Chambers, 7 Edgware Road, Marble Arch, London, W.2 (Ambassador 2471–3), where trade catalogues will be welcome. **Mr. S. Grahame Budd** [*A*] is in charge of the office at 26 High Street, Chatham, and the office at 60 Woodland Lane, Leeds, 7, is in the charge of **Mr. J. Cybulski,** A.M.T.P.I.

Messrs. G. A. Jellicoe and Partners [*F*/*A*] of 12 Gower Street, London, W.C.1, are now practising under the style of **Jellicoe, Ballantyne and Coleridge.**

Mr. J. W. Macalpine [*A*] is now in private practice at 174 Brompton Road, London, S.W.3 (Knightsbridge 8468), where he will be pleased to receive trade literature.

Mr. R. G. P. Nunan [*A*] has established a practice at 'Bridge Cottage', Amport, Nr. Andover, Hants (Weyhill 368), where he will be pleased to receive trade catalogues, etc.

Mr. H. Graham Powell [*A*] has commenced private practice at Spring Tops, School Road, Charlton Kings, Nr. Cheltenham, where he will be pleased to receive trade catalogues, etc.

Owing to ill-health **Mr. S. B. Pritlove** [*F*] has retired from practice at 37 Great Pulteney Street, London, W.1. **Mr. A. J. Newton** [*A*] of Messrs. Burles and Newton [*AA*], 25 Bedford Row, London, W.C.1, is dealing with professional matters on behalf of Mr. Pritlove.

Mr. J. Roland Sidwell [*A*] has taken **Mr. Morris H. Barnwell** [*A*] and **Mr. J. Leslie Glover** into partnership under the style of **J. Roland Sidwell, A.R.I.B.A., and Partners,** at 27 Union Street, Coventry (Coventry 22393–4).

Messrs. W. B. Starr, Hall and Clifford (**L. Clifford** [*L*] and **J. R. W. Carman** [*A*]) have taken **Mr. W. F. Kemp** [*A*] into partnership under the style of **W. B. Starr, Clifford and Carman.** They have also moved to new offices at Beedham House, 204 Derby Road, Nottingham (Nottingham 43192 and 43828).

The partnership between **Mr. John Edwin Sterrett** [*F*] and **Mr. Douglas Montague Blouet** [*A*] of 3 Ashley Place, Westminster, London, S.W.1, has been dissolved by mutual consent as from 15 December 1958. Mr. Sterrett is now practising from 21d Ashley Place, Westminster, and Mr. Blouet is practising from 10 Adelaide Street, Strand, London, W.C.2.

CHANGES OF ADDRESS

Mr. T. A. L. Belton [*A*] has changed his address to 7 Wetherby Gardens, London, S.W.5 (Fremantle 3711).

Mr. John Deaville Burt [*A*] has changed his address to 53 The Drive, Tonbridge, Kent.

Mr. William G. Cowburn [*A*] has changed his address to Leach Lodge Farm, Leach Lane, St. Annes-on-Sea, Lancashire (St. Annes 1878).

Messrs. Cowell, Drewitt and Wheatly [*A*/*L*] have reopened their office at London House, Newquay, Cornwall. **Mr. C. J. Dart** [*A*] will be in charge and will be pleased to receive trade catalogues, etc.

Mr. William Henry Crocker [*A*] has changed his private address to Pear Trees, Barwick Road, Garforth, Nr. Leeds.

Mr. Andrew Cunnison [*A*] has changed his address to 1 Heron Way, Horsham, Sussex.

Mr. Gerald A. Davies, M.R.A.I.C. [*A*] has changed his address to 8 Tadcaster Place, Don Mills, Ontario, Canada.

Messrs. Dyson and Hebeler [*FF*] have changed their address to 1 Scroope Terrace, Cambridge.

Mr. Brian Elsworth [*A*] has changed his address to Mill Hill, Brompton, Nr. Northallerton, Yorks.

Mr. L. Michael Flaux [*A*] has changed his address to 2 Players Avenue, Malvern Link, Worcestershire.

Mr. Ronald Hardy, M.B.E. [*A*] has changed his office address to 9 Devereux Court, Strand, London, W.C.2 (Central 6652–4).

Mr. R. Jelinek-Karl [*F*] has changed his address to 6 Buckingham Street, Strand, London, W.C.2 (Trafalgar 3020).

The firm of **Mark Jennings, Son and Partners,** in which **Mr. J. M. Slater** [*A*] is a partner, have changed their address to 21 Conduit Street, London, W.1.

Mr. J. Kerr Large [*A*] has joined the staff of Messrs. Richard Costain, Ltd., in their Middle East Division and his address will be c/o 111 Westminster Bridge Road, London, S.E.1.

Mr. L. J. Laws [*A*] has changed his address to c/o Chief Engineer, Middle East Land Forces, British Forces Post Office, 53, Cyprus.

Mr. J. A. Matthews [*A*] has changed his address to 27 Coxwell Boulevard, Toronto 6, Canada (OX. 8–5911).

Messrs. Wm. and T. R. Milburn (**J. B. Willey** [*A*] and **Stanley Smith** [*A*]) have changed their address to 4 Grange Terrace, Stockton Road, Sunderland (Sunderland 3687–8), where they will be pleased to receive trade catalogues.

Messrs. C. Wycliffe Noble and Partners [*A*] have moved their office to 273 Kings Road, Chelsea, London, S.W.3.

Mr. R. E. Owen [*A*] has changed his address to Fern House, Tubney, Nr. Abingdon, Berkshire, where he will be pleased to receive technical literature and trade catalogues.

Mr. Robert W. Paterson, A.M.T.P.I. [*A*] has moved his office from Church House, College Green, to 11 College Green, Gloucester. The telephone number remains Gloucester 20122.

Mr. E. Graham Reddie [*A*] has changed his address to 1 Portway Crescent, Ewell, Surrey. His telephone number remains Ewell 6379.

Mr. Patrick Graham Swann, A.M.T.P.I. [*A*] has changed his address to the County Planning Department, County Building, Caernarvon, North Wales (Caernarvon 2341).

Mr. David R. Tong [*A*] is now practising from 79 London Street, Reading, Berks, where he will be pleased to receive technical literature, etc.

Mr. A. W. Watters [*A*] has changed his address to c/o Borough Architect's Department, Civic Centre, Southampton, Hants.

PRACTICES AND PARTNERSHIPS WANTED AND AVAILABLE

Partnership wanted in established London practice by Associate with 20 years' experience in London. Good references. Capital available. Box 45, c/o Secretary, R.I.B.A.

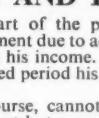
Associate (30), full-time building and architectural school training, nine years' senior varied practical experience, seeks senior position in London area leading to full partnership after probationary period. Capable design and control of contracts up to £750,000. Hard work no deterrent. Some capital available. Box 67, c/o Secretary, R.I.B.A.

Associate (42), with good all-round experience, contemporary outlook, seeks partnership or responsible position leading thereto, preferably in the North or Midlands. Some capital available. Box 68, c/o Secretary, R.I.B.A.

Associate (38) is keen to negotiate the purchase of a practice on gradual retirement, preferably in southern counties. Substantial capital available. Further details from Box 69, c/o Secretary, R.I.B.A.

Associate, A.A.Dipl., (38), with nine years' varied experience in private practice, seeks partnership or senior post leading to partnership. Single. Car owner. Some capital available. Box 70, c/o Secretary, R.I.B.A.

The Royal Institute of British Architects, as a body, is not responsible for statements made or opinions expressed in the JOURNAL.



HEALTH AND INCOME

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(Telephone: Langham 5533.)

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Compare the Running Costs! This table shows typical comparative costs for different fuels. These have been calculated for a 3 bedroom house of some 1000—1,200 square feet and are those of an *average* week's heating and hot water supply during the 30-week heating season. Fuel prices vary, of course, and local costs can easily be calculated from those given. If you would like the data on which these figures are based, write to the Coal Utilisation Council, 3 Upper Belgrave Street, London, S.W.1.

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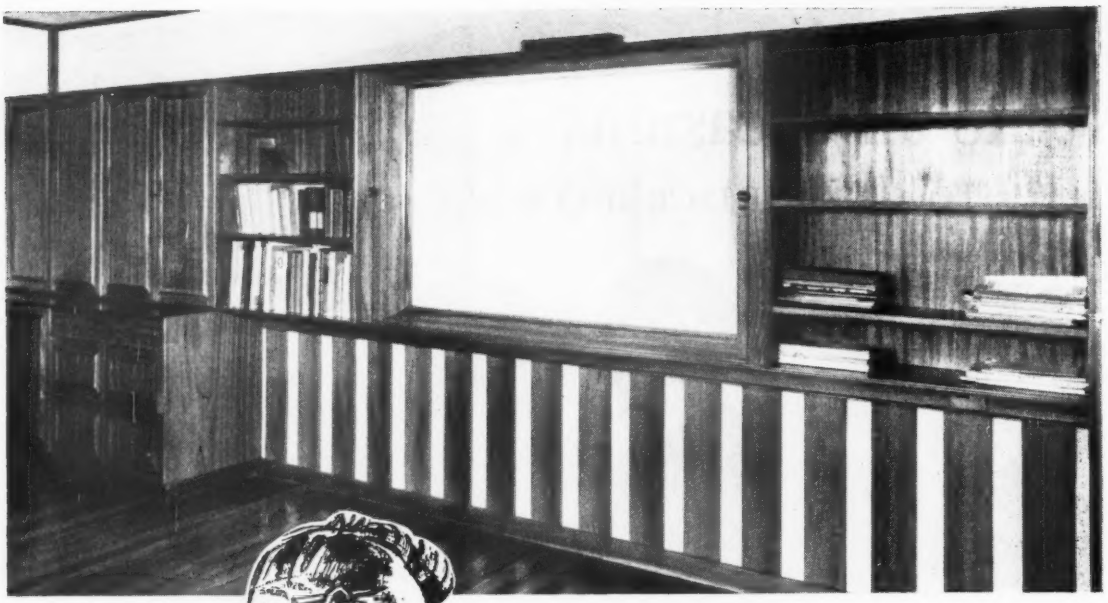

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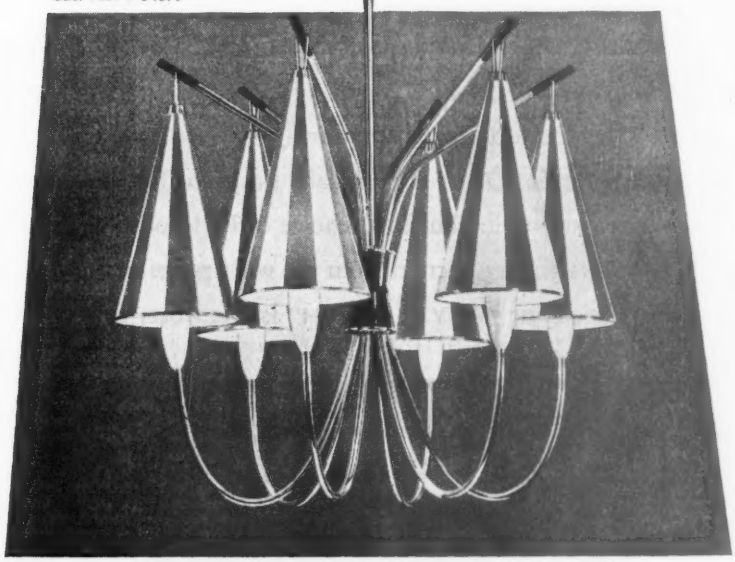

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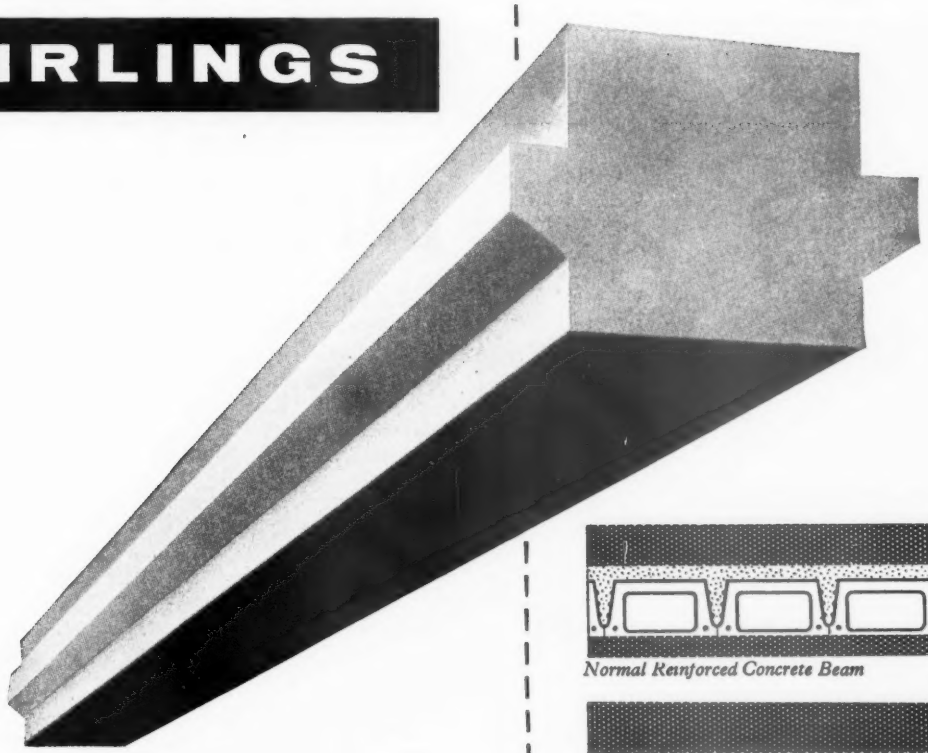
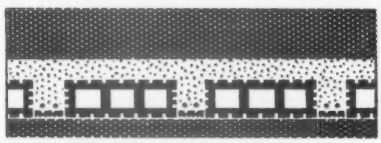
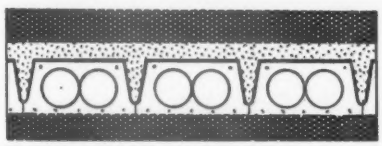


Normal Reinforced Concrete Beam



Hollow Tile Reinforced Concrete Floors



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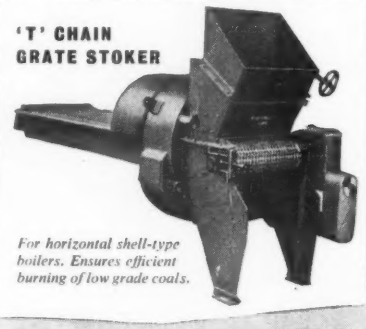

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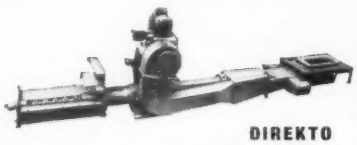

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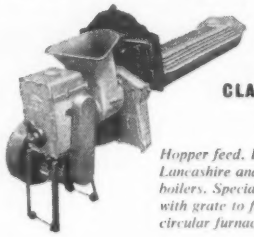

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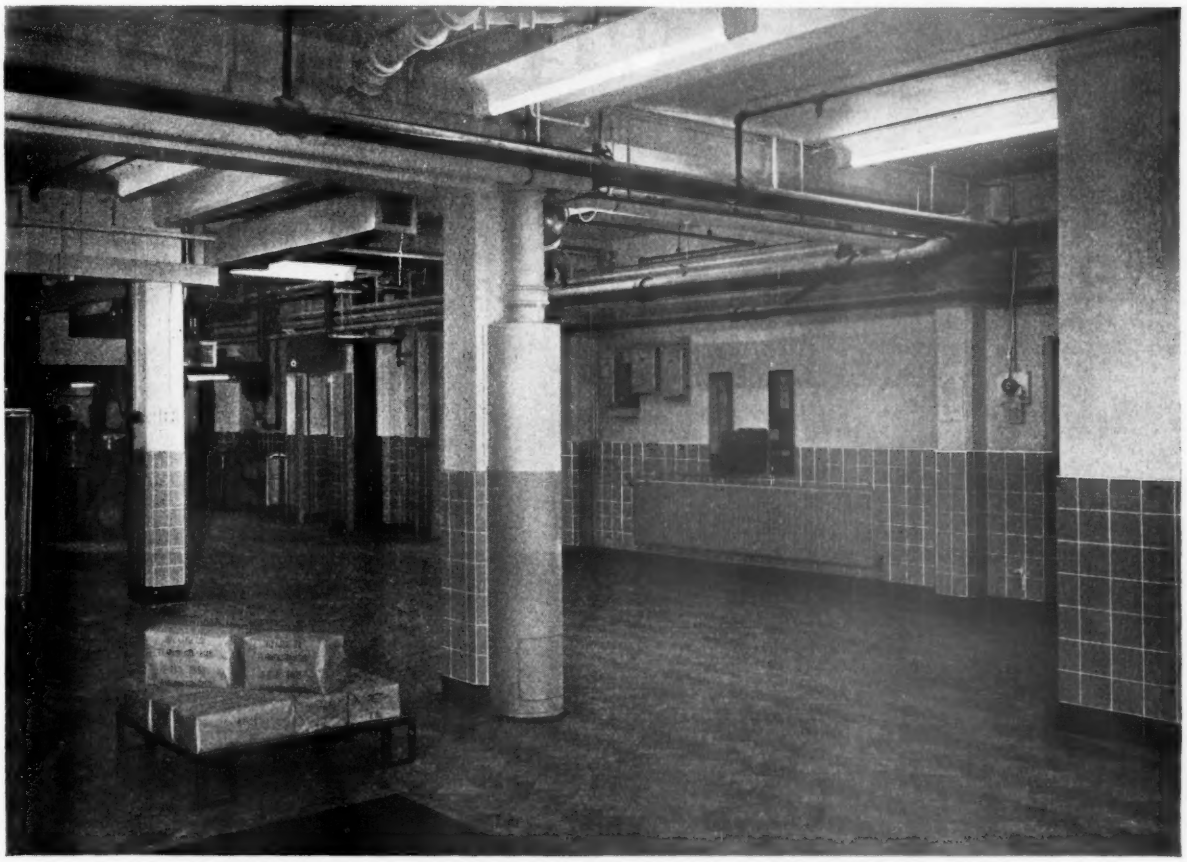

Architects: S. N. Cooke & Partners, F/F.R.I.B.A. Chartered Architects, 35, Harborne Road, Edgbaston, Birmingham. 15.
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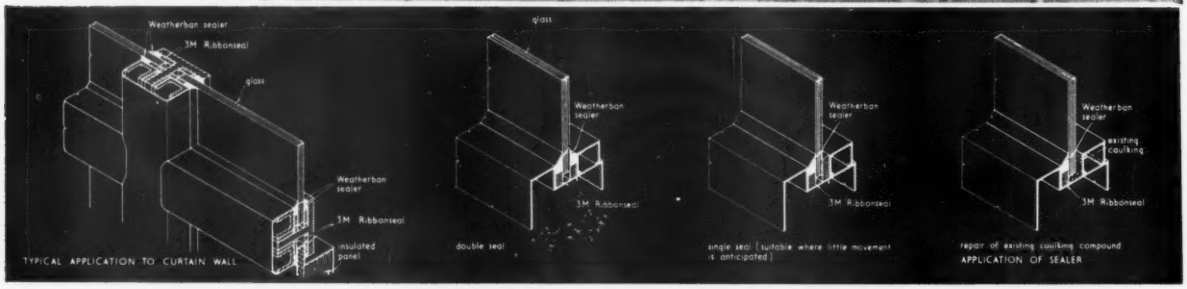

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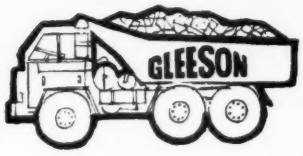

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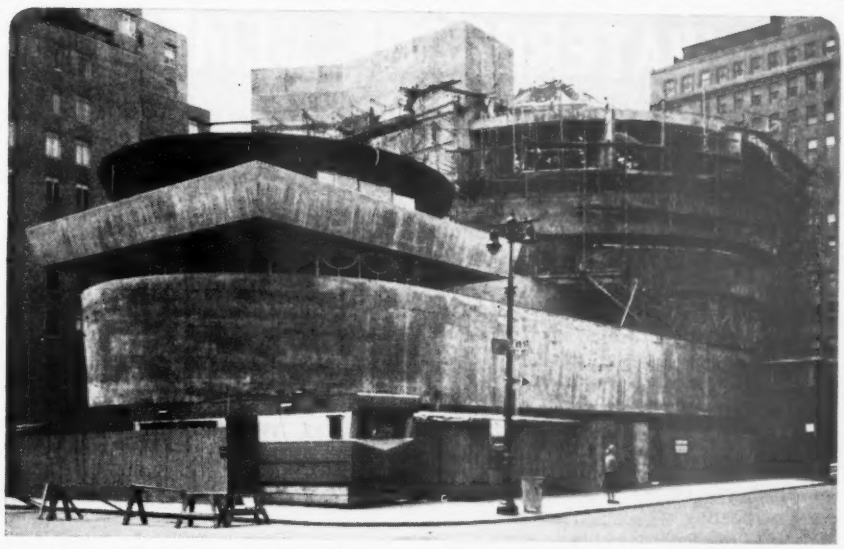

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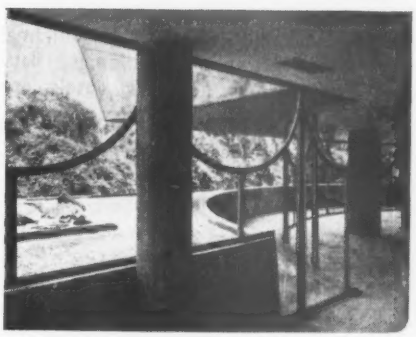
Frank Lloyd Wright
Architect



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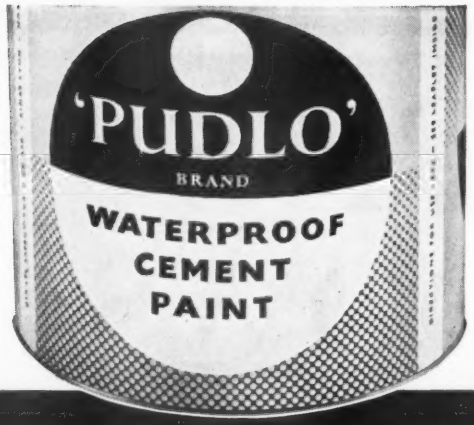

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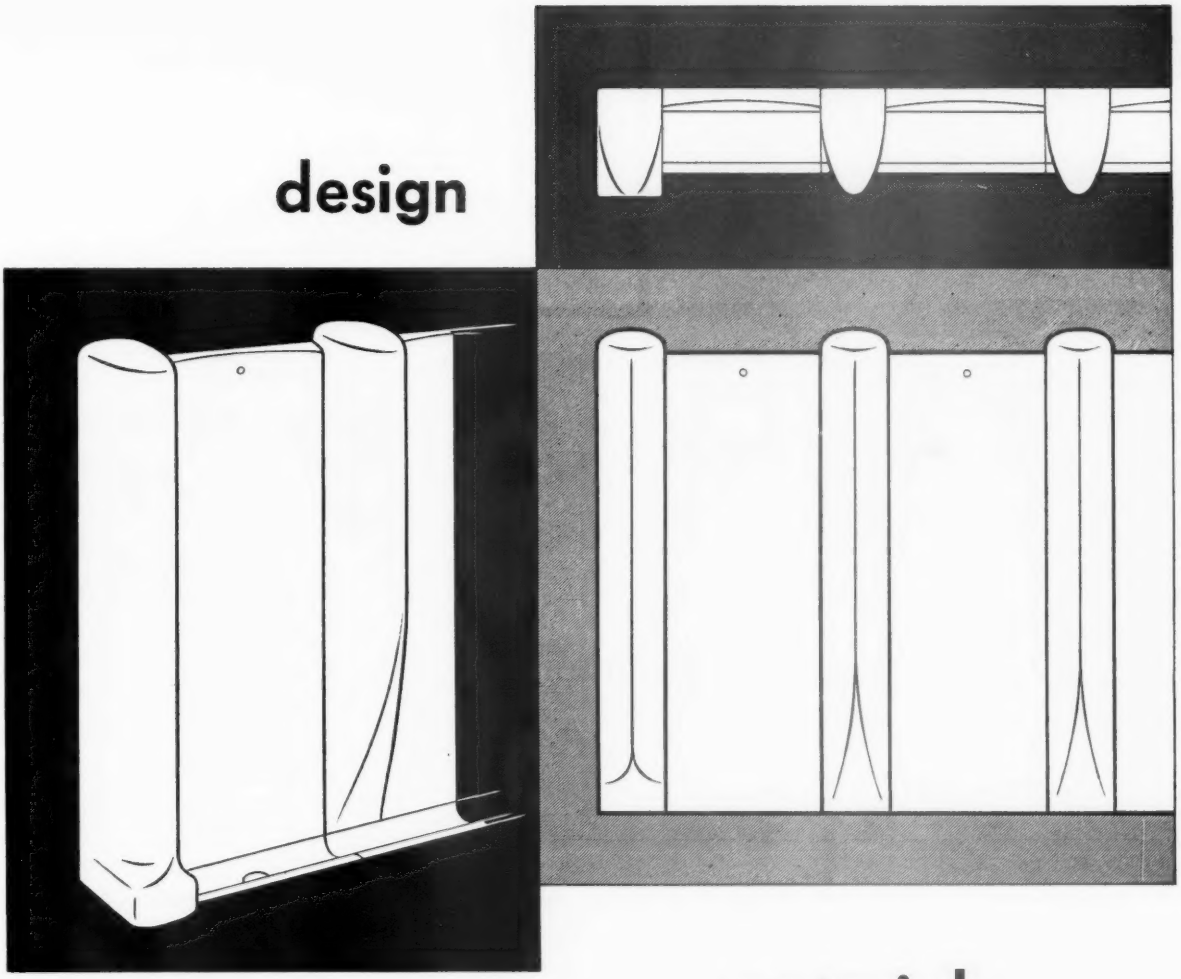

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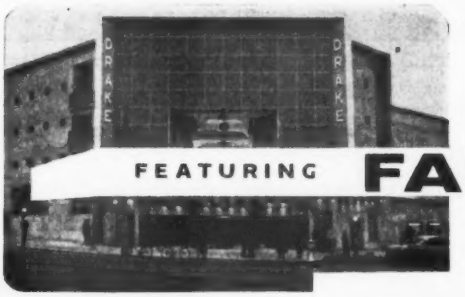

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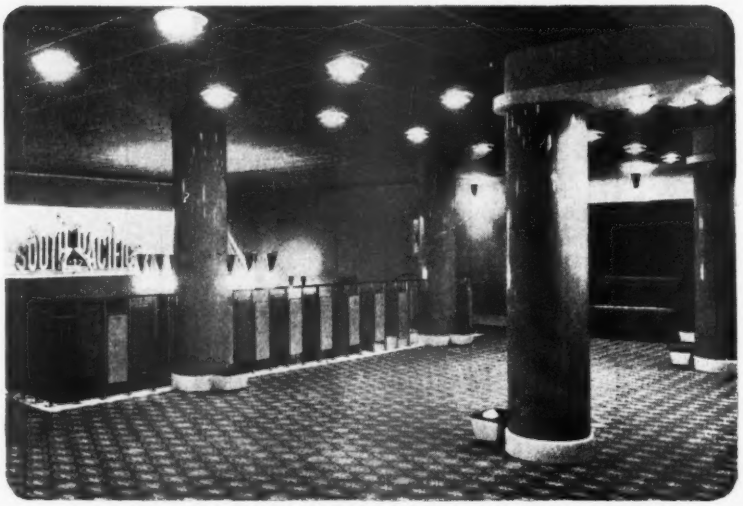

Architect: Leonard Allen, F.I.A.A.

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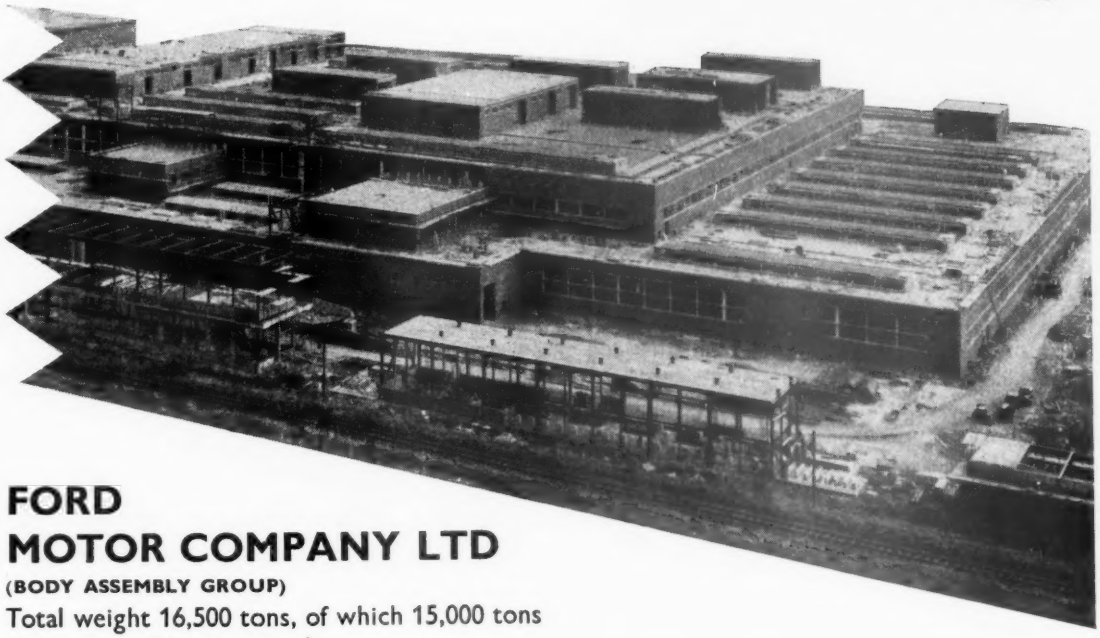
In order to accommodate the very wide photograph of the new plant, it is shown cut into two parts.



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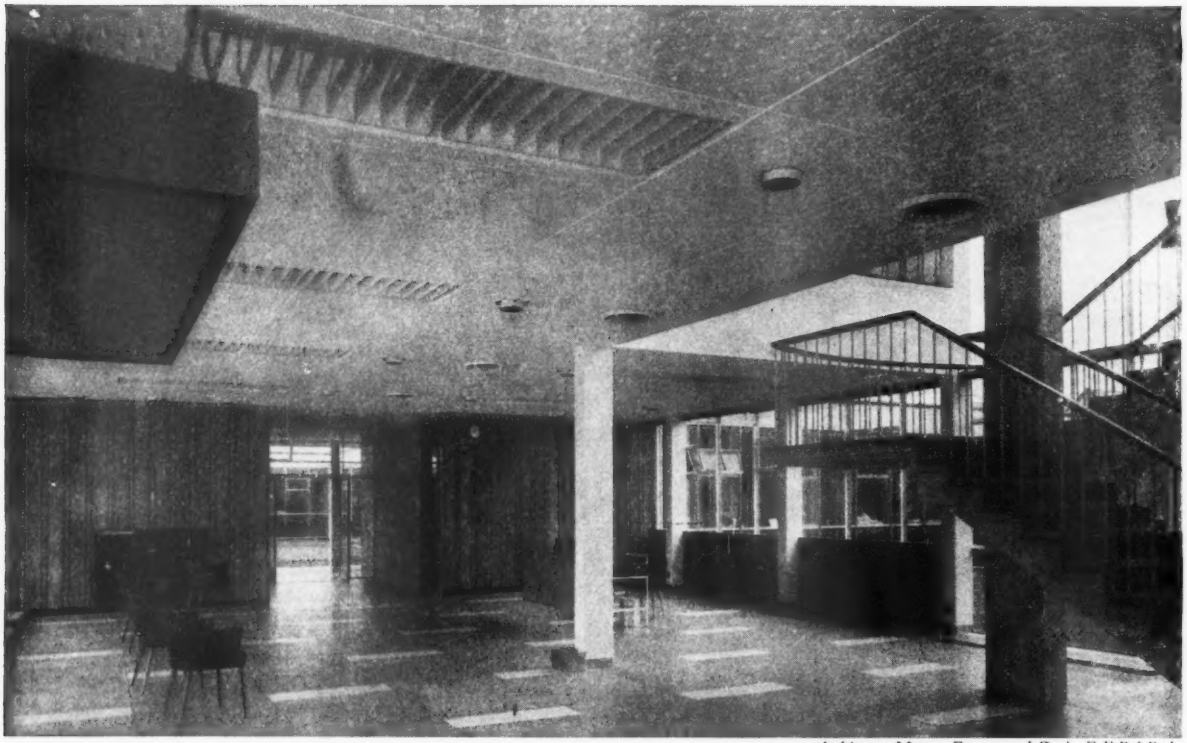

Architects: Messrs. Farmer and Dark, F/F.R.I.B.A.

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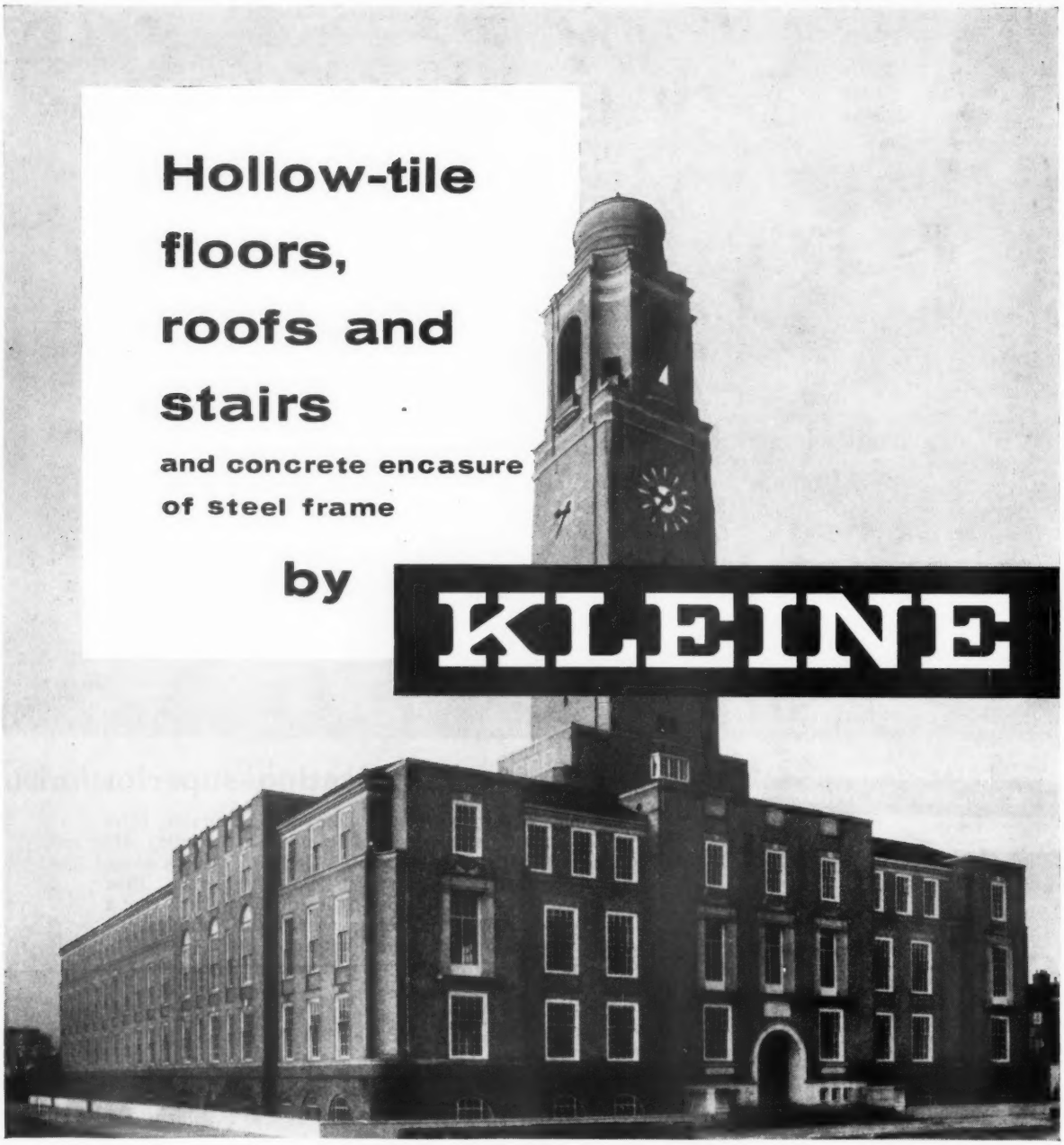

New Town Hall, Barking,
for the Borough of Barking, Essex

Borough Architect: M. Maybury, A.R.I.B.A.
Architects: Jackson & Edmonds, F/F.R.I.B.A., M/A.M.T.P.I.
Consulting Engineers: Septimus Willis, M.I.C.E., M.I.Struct.E., A.M.Inst.W., M.Cons.E., and Associates.

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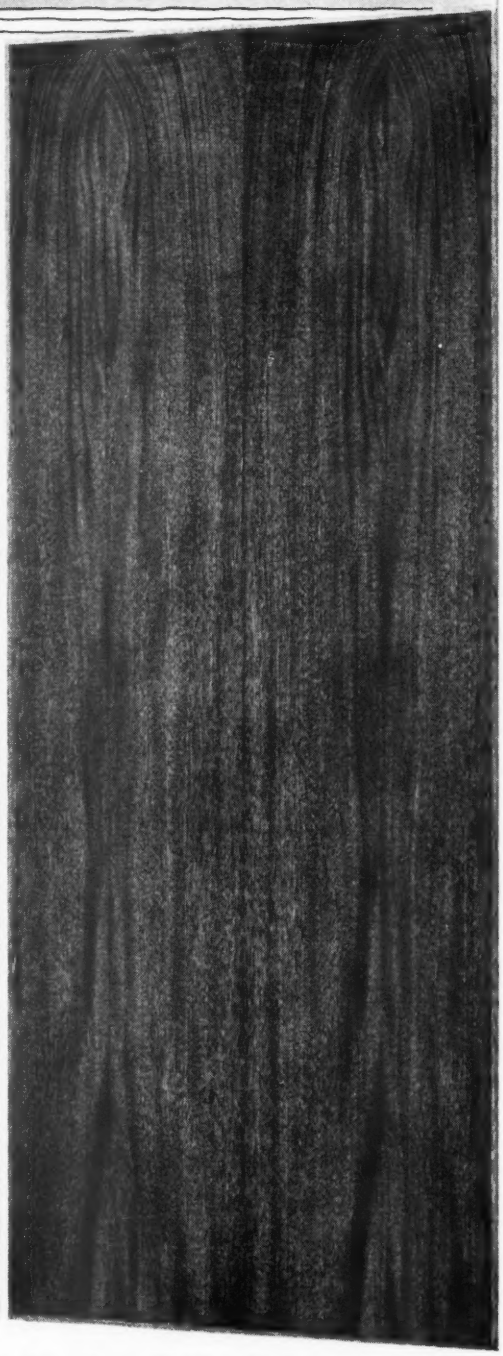

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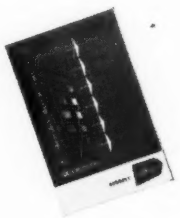

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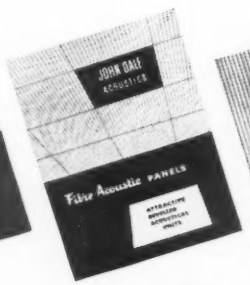

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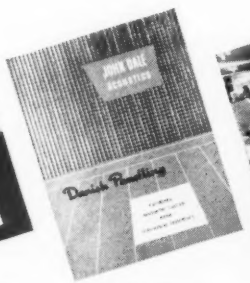

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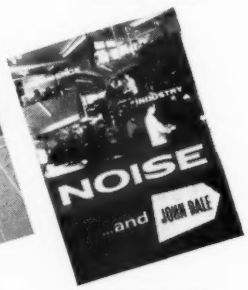

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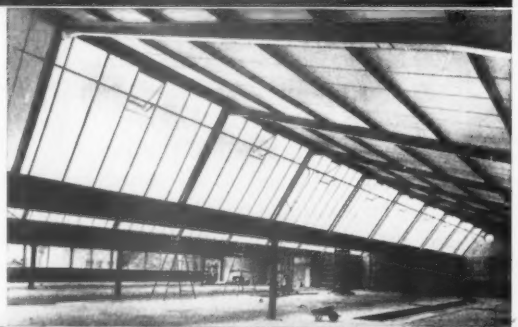

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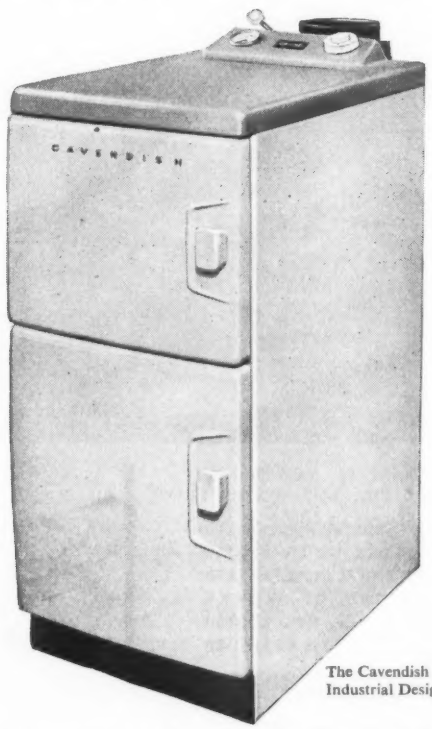

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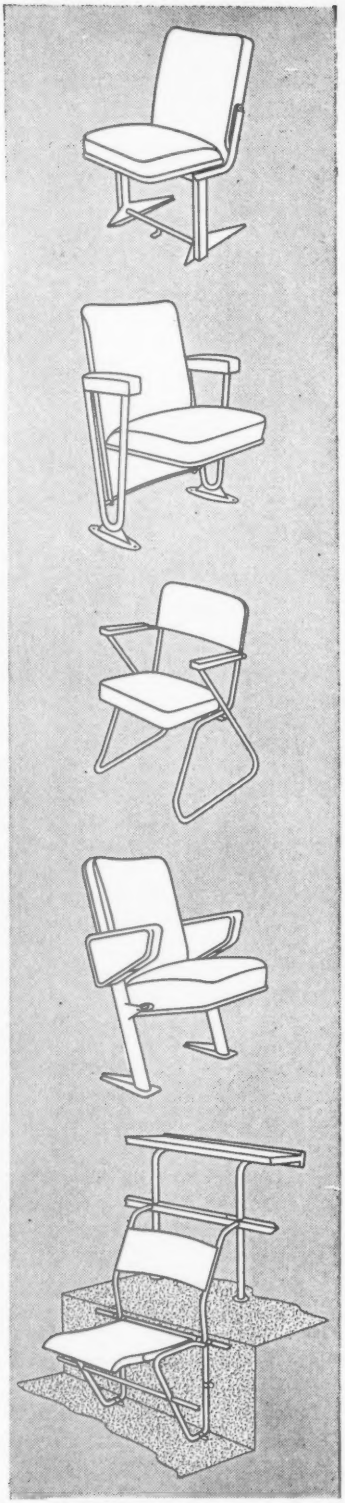

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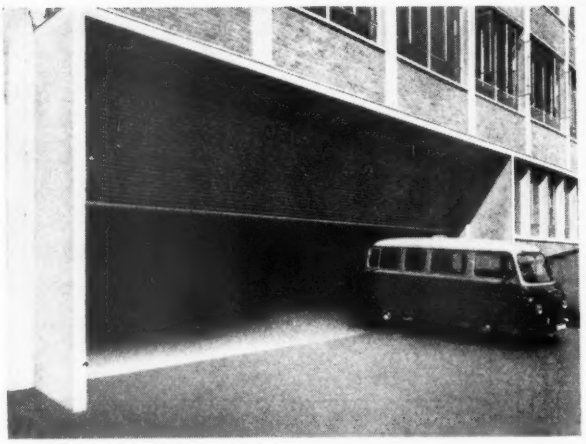

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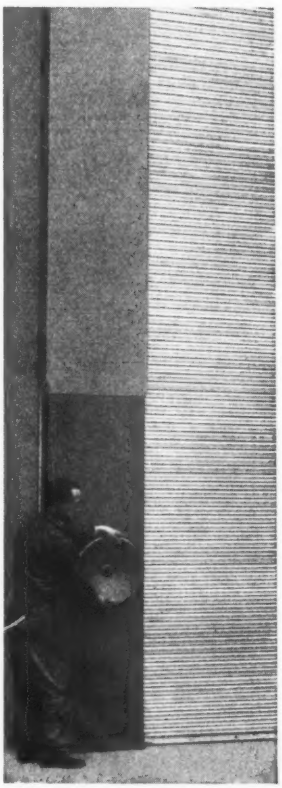

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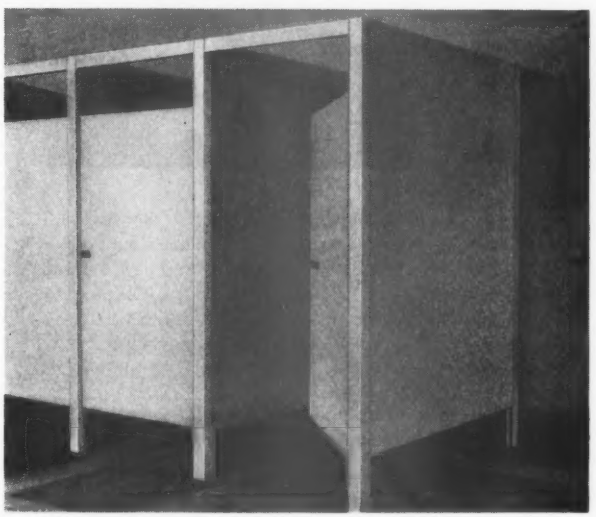

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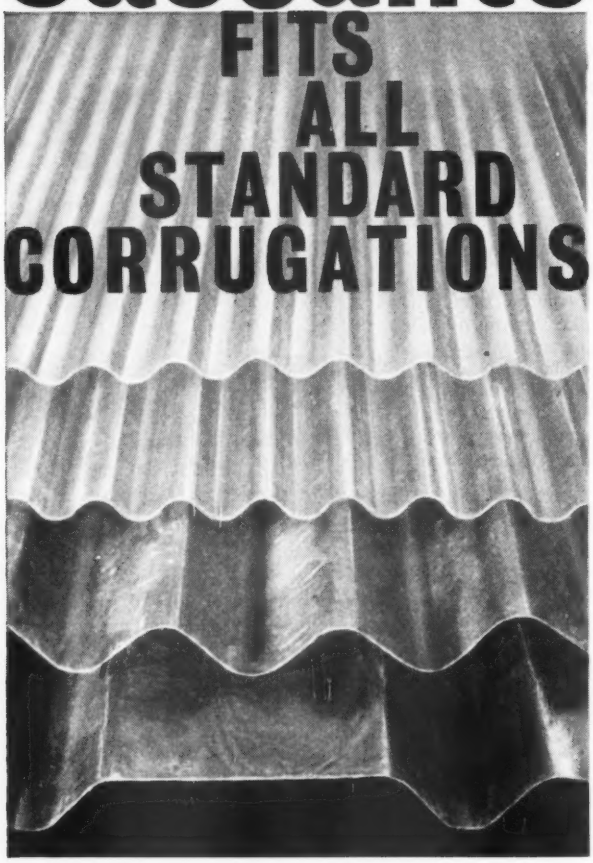

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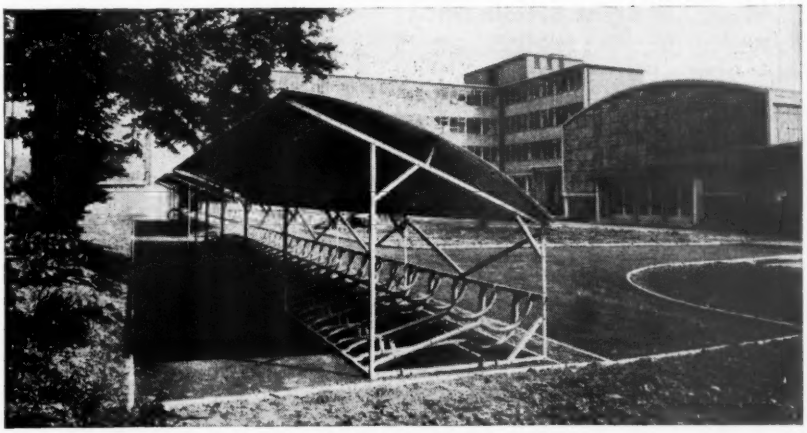

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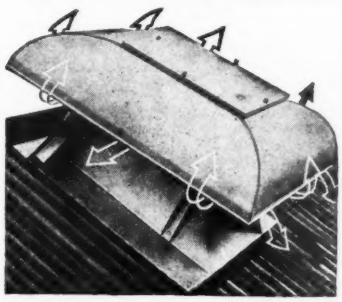

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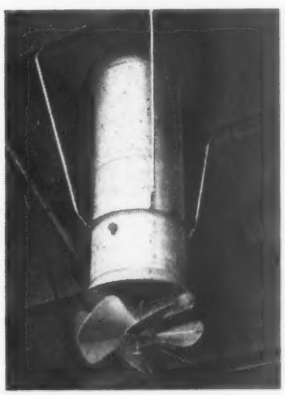

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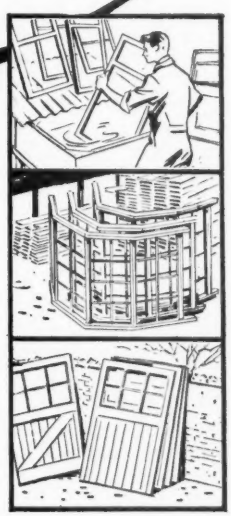

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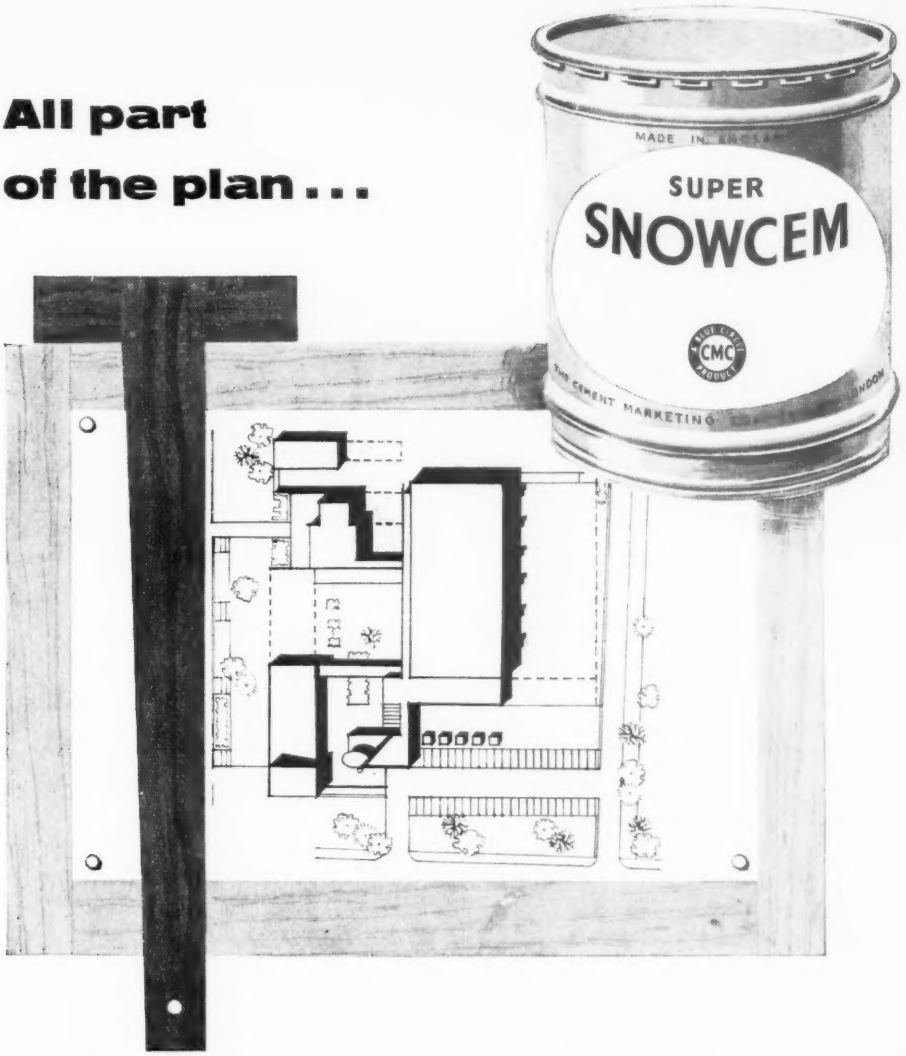

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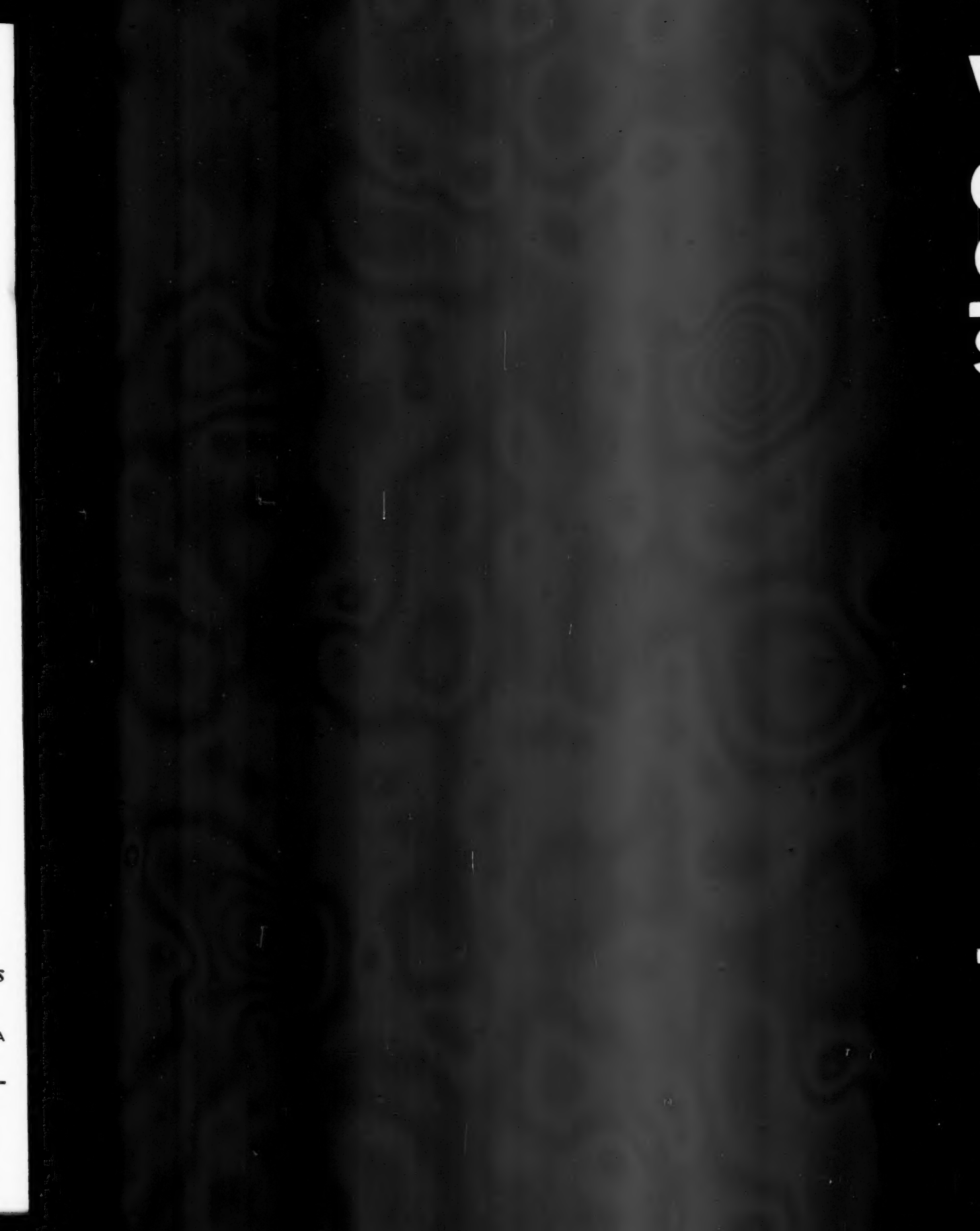


BUILDING RESEARCH STATION DIGEST 124

July 1959

Small Underground Drains and Sewers: I

THIS Digest and the next (No. 125) review the design and construction of drains and sewers in the light of recent studies. Part I is concerned with their structural design; Part II will deal with watertightness, flexible joints, site work, and testing. The advice given in these Digests supersedes any corresponding advice given in Digest No. 55 (1953), more particularly as regards the use of site concrete and methods of jointing.

From the many inquiries and reports of failures received at the Building Research Station in the last few years it would appear that fractures in underground drains and sewers, particularly of the smaller sizes, are very common. Investigation has shown that, with a better understanding of the loading conditions and of the strength properties of various types of pipe, most of the common types of fracture can be readily avoided, with consequent improvement in sanitary efficiency and reduction of maintenance costs.

The effects of fractures in a drain or sewer depend on the manner in which they occur, on the relative water pressures inside and outside the pipe, and on the nature of the soil in which they are laid. In general, they encourage blockages by introducing rough edges and upstands, and by admitting tree roots. They also usually permit infiltration of ground water and soil, leading to extra costs of pumping and/or treatment of the sewage.

In dry soils, or if the pipe collapses or becomes blocked, sewage may leak into the surrounding soil, pollute the groundwater, soften the soil, and cause insanitary conditions. In some soils, fractures may not necessarily cause collapse of the pipe-line, and may go undetected for long periods until blockage, damage, or nuisance, draws attention to them. During this period insanitary conditions may not occur, but consequential structural damage to the foundations of roads or nearby buildings may become serious.

Pending the revision of the Code of Practice for Building Drainage, CP. 301, definitions of some of the more unfamiliar terms used in this Digest are given below.

DEFINITIONS

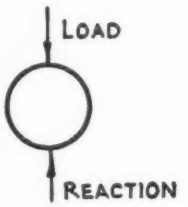
Flexible pipes. Pipes in which the increase in horizontal diameter under vertical loading is large enough to enable lateral soil pressure to assist the pipe in resisting the vertical load; e.g. steel, pitch fibre.

Brittle or rigid pipe. Pipes in which the increase of the horizontal diameter under vertical loading is too small to enable lateral soil pressure to assist the pipe significantly in resisting the vertical load; e.g. salt-glazed ware or other ceramic pipes, plain concrete or cast-iron pipes. Such pipes fail suddenly with a brittle fracture.

Laboratory strength. The minimum ultimate 2-edge-bearing crushing load per linear foot of pipe as derived from standard crushing test

loads (W_T), or standard proof strength, multiplied by a reduction factor appropriate to the type of bearings used in the test. For the rubber bearings specified in B.S. 556, this factor is 0·9 for any rigid pipe up to 12 in. diameter (i.e. laboratory strength = 0·9 W_T).

Two-edge bearing. A theoretical loading condition used to eliminate differences in test results due to various forms of practical test bearings, which in fact distribute the load and reaction over more or less of the pipe periphery.



Field strength (W_f). The maximum uniformly distributed vertical load per linear foot of length that a pipe will carry without fracture when laid underground. It is determined by the type of bedding provided, and by the laboratory strength of the pipe. Thus, the field strength is equal to the laboratory strength multiplied by a bedding factor.

Bedding factor (F_m). The field strength of a pipe, as determined experimentally for various standard methods of bedding construction, divided by its laboratory strength (i.e. $F_m = W_f/0{\cdot}9W_T$.)

Maximum effective primary load (W_e). The sum of the maximum vertical loads caused by the backfill and surface surcharges that may at any time be imposed simultaneously on a pipe, appropriately increased for the impact of wheel loads and for the non-uniform distribution of these loads over the external diameter of the pipe, expressed as a uniformly distributed load per linear foot of pipe length.

Cover (H). The distance from the ground surface to the pipe crown.

Pipe crown. The highest point on the external surface of the pipe barrel.

Trench width or effective trench width (B_d). The distance between the undisturbed soil faces of the trench at the level of the pipe crown.

Estate road or carriageway. Any road, private drive, or yard which will never be used by vehicles having any wheel load exceeding 7000 lb or any axle load exceeding 14 000 lb, or be subjected to a uniformly distributed surcharge exceeding 500 lb/sq. ft.

Flexible-telescopic joint. A type of pipe joint that permits both angular movement (slew) and axial movement (draw or shortening) of the jointed pipes without loss of watertightness.

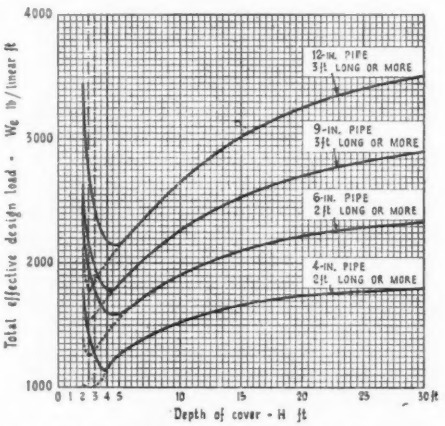
Infiltration. The flow of water from the ground into a pipe.

Exfiltration. The flow of water or sewage from a pipe into the ground.

THE STRUCTURAL DESIGN OF BRITTLE PIPELINES

The essential requirements of a pipeline *as a structure* are:

1. That the field strength of the pipes (other than ceramic pipes) shall be at least equal to the maximum effective primary load caused by the backfill and surface surcharges which they will



Note: Under roads and carriageways the normal minimum cover is 4 ft, and special protection is required if the cover is less than 3ft. Under fields and gardens the normal minimum cover is 2 ft 6 in., and special protection is required for shallower cover.

Fig. 1 Effective primary loads related to depth of cover, for different pipe sizes

at any time have to carry, or, with ceramic pipes, at least equal to 1·5 times this load.

2. That the pipeline remains watertight at all times, hence that it has adequate axial flexibility and extensibility and is so supported by its bedding and foundation as to avoid fracture by secondary loads and forces.

3. That the materials used in pipes, jointing, and bedding are, or are so treated as to be, and remain, chemically inert in both the internal and external environments to which they may be exposed.

Primary loads and pipe strength

If the field strength (W_f) of the pipes is less than the maximum effective primary load (W_e), the pipes will eventually fail by excessive circumferential bending and suffer *overload fracture*, i.e. they will be split from end to end, roughly on the vertical and horizontal diameters.

The method of estimating maximum effective primary loads is too lengthy for inclusion here. Figure 1 gives their approximate values for pipes up to 12 in. diameter, and for cover depths up to 30 ft under estate roads and carriageways, fields and gardens, when laid in trenches of width not exceeding 1 ft 9 in. for 4-in. pipes, 2 ft for 6-in., 2 ft 3 in. for 9-in., and 2 ft 6 in. for 12-in. pipes.

For the two recommended classes of bedding shown in Fig. 2, the respective field strengths are as shown in Table 1, in which the safety factor of 1·5 for ceramic pipes has been introduced by dividing the bedding factor by 1·5.

TABLE 1

Field Strengths of Rigid Pipes

Bedding class	Bedding factor (F_m)	Field strength W_f (lb per linear foot)	
		Concrete or cast-iron pipes	Ceramic pipes
B	1·9	Laboratory strength × 1·9	Laboratory strength × 1·27
A.120	2·6	Laboratory strength × 2·6	Laboratory strength × 1·73

If Class *A*.120 bedding does not give a sufficient field strength, or if it is desired not to use site concrete, a stronger class of pipe should be used. Alternatively, weak pipes in sizes up to 12 in. may be strengthened by surrounding them with not less than 4 in. of site concrete, placed in one continuous operation (i.e. with no horizontal construction joints) and having a crushing strength of not less than 2000 lb/sq. in. at the time of backfilling, but with gaps at each pipe joint (see Fig. 3).

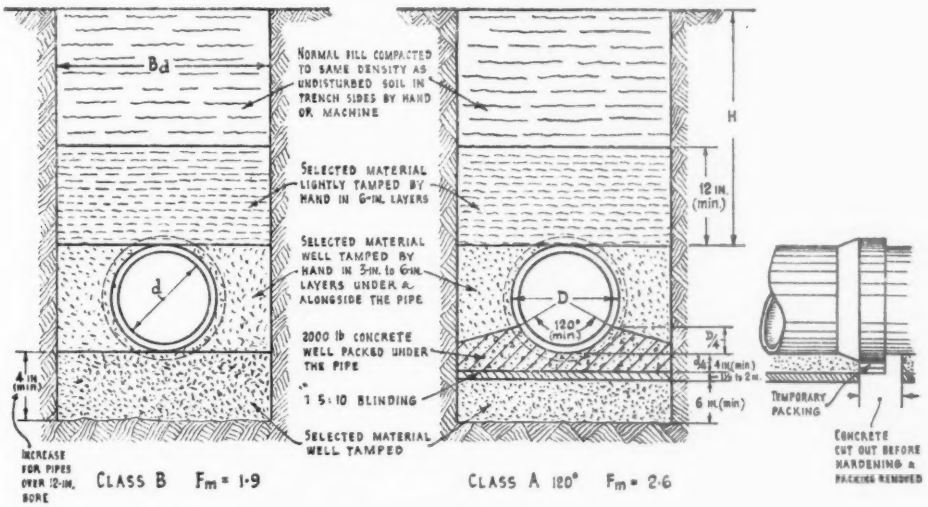

Bd
NORMAL FILL COMPACTED TO SAME DENSITY AS UNDISTURBED SOIL IN TRENCH SIDES BY HAND OR MACHINE
SELECTED MATERIAL LIGHTLY TAMPED BY HAND IN 6-IN. LAYERS
SELECTED MATERIAL WELL TAMPED BY HAND IN 3-IN. to 6-IN. LAYERS UNDER & ALONGSIDE THE PIPE
2000 lb CONCRETE WELL PACKED UNDER THE PIPE
1 5:10 BLINDING
SELECTED MATERIAL WELL TAMPED
4 IN (MIN.)
INCREASE FOR PIPES OVER 12-IN. BORE
CLASS B Fm = 1·9
H
12 IN. (min.)
D
120° (min.)
¼
¼
4 IN.(min)
1½ to 2 in.
6 in.(min)
TEMPORARY PACKING
CONCRETE CUT OUT BEFORE HARDENING & PACKING REMOVED
CLASS A 120° Fm = 2·6

Fig. 2 Classes of bedding, and bedding factors

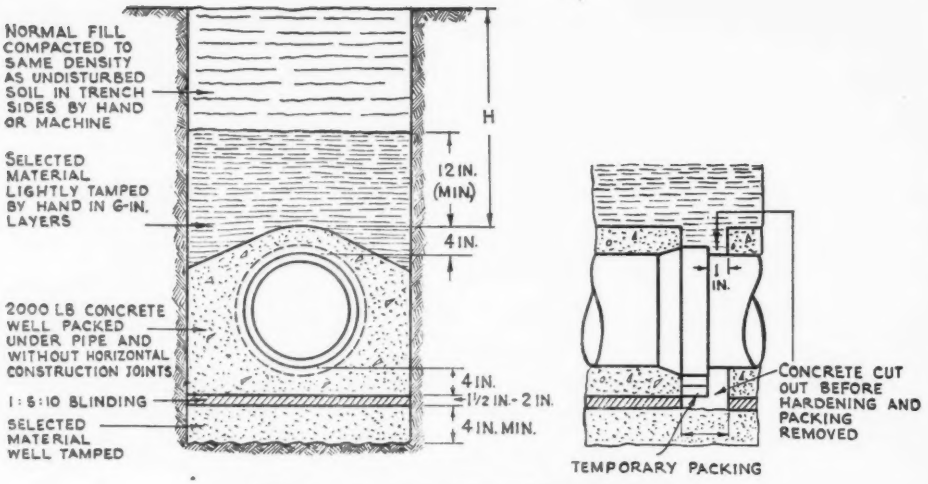

NORMAL FILL COMPACTED TO SAME DENSITY AS UNDISTURBED SOIL IN TRENCH SIDES BY HAND OR MACHINE
SELECTED MATERIAL LIGHTLY TAMPED BY HAND IN 6-IN. LAYERS
2000 LB CONCRETE WELL PACKED UNDER PIPE AND WITHOUT HORIZONTAL CONSTRUCTION JOINTS
1 : 5 : 10 BLINDING
SELECTED MATERIAL WELL TAMPED
H
12 IN. (MIN)
4 IN.
4 IN.
1½ IN.- 2 IN.
4 IN. MIN.
1 IN.
CONCRETE CUT OUT BEFORE HARDENING AND PACKING REMOVED
TEMPORARY PACKING

Fig. 3 4-in. concrete surround for weak pipes

The proof strength (W_T) of B.S. concrete pipes is 1350 lb/linear ft, and the correction factor for pipes up to 12 in. diameter may be taken as 0·9. The laboratory strength of such pipes is then not less than $0{\cdot}9 \times 1350 = 1215$ lb/linear ft and, for this strength, the depths of cover given in Table 2 should not be exceeded under estate roads and carriageways, fields and gardens.

For concrete pipes having laboratory strengths considerably in excess of 1215 lb/linear ft, appropriate increases may be made in the limiting depths given is Table 2 by reference to Fig. 1, by substituting the appropriate field strength (W_f) for the maximum effective primary load (W_e).

For ceramic pipes or cast-iron pipes to B.S. 437, which, as yet, have no standard test strength, it is necessary to obtain the laboratory strength before the appropriate bedding class for a given depth of cover can be determined. For such pipes the suppliers should be asked to give a guaranteed minimum crushing test strength (W_T), or the necessary tests should be made, and the correction made, as above, to obtain the laboratory strength.

TABLE 2

Concrete Pipes to B.S. 556
(W_T = 1350 lb/ linear ft)

Nominal size of pipe		Maximum permissible cover (ft)		
Internal diameter (in.)	Length (ft)	Bedding class		4-in. concrete surround with no horizontal joints
		B	*A*.120	
4	2 or more	No limit	—	—
6	2 or more	26	No limit	—
9	3 or more	10·5	No limit	—
12	3 or more	6·5	17.5	No limit

Note: This table is not applicable to public roads or industrial yards carrying heavy traffic.

Minimum cover

To avoid interference with water supply and other underground services under roads, or soil tillage and land drainage under fields and gardens, pipes should not normally be laid with less than 4-ft cover under the former or 2 ft 6 in. under the latter. If shallower cover is unavoidable, a protective slab should be placed over but not in contact with the pipe. Under roads this slab should be reinforced and extend well beyond the trench sides so as to transmit traffic loads to the undisturbed soil, the trench being kept as narrow as possible.

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